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In the Name of Pity—Give!

Oh, America of the great heart, the cry of the stricken peoples of the Near East is heard at your door.

You have been so close to us through all the years of our struggles toward the light. Your hands outstretched to us have never been empty.

And now we cry to you from the depths of a greater need than even our torn souls have ever known. In the name of pity—do not fail us!

There has been cruel suffering in our lands, massacre, famine, death. But the spirit of our people still lives, and calls to you across the sea to send help lest we perish.

Our God is your God, and we bare our souls for your searching eyes that you may see how we have never denied Him, nor shamed Him. When our world rocked in misery about us, in our torn and tortured bodies our hearts still cradled and sheltered the crucified Christ. We held true in our allegiance to God and humanity.

The people of the Near East are old in suffering. The way we have traveled has been via Dolorosa, the way of tears and blood. And now—we are so low in the dust that only your young, unshattered strength can raise us.

Around the world the news has gone, is ringing today clarion-clear, that America's men and America's women have never yet been called upon in vain to right a wrong, to protect the weak, to succor the defenseless. We cry to you, help us—America! We are Armenians, Syrian, Greek, Jew, and we speak strange tongues, but our need of you, help us — America! We are Armenian, Syrian, What is left of our men and women, young men and maidens, are without work, without shelter, without clothing, racked with disease. Open your great hearts and give and our people will pay. In the years to come, how they will pay in return! You, who are so safe and strong beyond the reach of such misery as ours, open your heart to our cry.

Every dollar subscribed goes to the Relief Work.

All expenses are privately met.

All funds are cabled through the Department of State.

All funds are distributed through U. S. Consuls or American Agencies.

Our Government is prevented from giving aid.

The Red Cross is not organized for Relief Work in these sections.

17c a day—$5 a month—$60 a year will buy life for one of us

In the name of pity—give!

Campaign for $30,000,000

JANUARY 12th to 19th

Make contributions payable to

American Committee for Relief in the Near East

(Formerly American Committee Armenian-Syrian Relief)

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Accounting of Commission for Relief in Belgium*

By L. D. MAPES.

The Commission for Relief in Belgium and its principal affiliated organizations are as follows:

(1) The Commission for Relief in Belgium, for short the C. R. B.;
(2) The Comite National de Secours et d'Alimentation, for short the Comite National (or C. N.);
(3) The provincial committees in various parts of Belgium;
(4) The Comite d'Alimentation du Nord de la France, for short the Comite Français (or C. F.);
(5) The district committees in various parts of the north of France;
(6) The Section Agricole du Comite National;
(7) The Bureau Produits Divers (discontinued in 1916);
(8) The Ship Owning Department, or the S. O. D.

Mr. Hoover has stated that the gigantic proportions of the problem could only find solution by systematic decentralization, both in collection and distribution.

In collecting funds or other gifts for the work, the general scheme of decentralization was extended so that the commission had relations with over 100 principal committees, and these in turn covered a field of over 2,000 sub-committees engaged in providing support to the commission's work.

In the distribution, advantage was taken of the communal system; local relief committees were organized in practically every

*A paper read before the American representatives of the Commission for Relief in Belgium, at Brussels, March 16, 1916, and since revised to October 31, 1917.

commune, and there was created over these committees a system of regional, district and provincial committees, with the Comite National at the apex, the relation of this organization to the C. R. B. being one of joint endeavor.

The interlocking of the committees is about as follows:

The communal committees are represented in the regional committees. The regional committees are represented in the provincial and district committees.

Delegates from the provincial and district committees act as working members of the Comite National and Comite Francais respectively.

Some of the members of the Comite National are members of the Comite Francais.

The C. R. B. is represented by delegates on both the Comite National and the Comite Francais.

Of the 7,000,000 inhabitants in Belgium, it has been estimated that 2,750,000 were found to be wholly or partly destitute as a result of the war and without resources with which to pay for food or clothing even if it existed in abundance. Inasmuch as the 2,300,000 inhabitants, as a whole, in the north of France are being supplied from without and not paying anything back to Brussels in return, they must also be treated in the calculations as if they, too, were all destitute, although many who are able to do so are obligating themselves in one way or another to pay at the end of the war, and a good many are paying in communal money and some in French money.

Engaged in the work here there have been about 130 regional and over 2,500 communal distributing committees, and about 1,500 relief committees in Belgium. In the north of France there have been about 70 regional and 2,100 communal distributing committees.

At the start the outside world was practically asked to take up furnishing the bread supply for the whole nation, as a matter of benevolence. Later, certain relaxations came regarding financial transactions, and the work of provisioning the population developed along commercial lines, being completely separated from the actual benevolent work, so that those who had resources were able to pay and thus help to make the general burden easier. Belgian banks and institutions have furnished very large sums for the working capital of the provisioning department.

THE COMMISSION FOR RELIEF IN BELGIUM

The C. R. B. has offices in New York, London, Rotterdam and Brussels.

Necessarily the London office has been made the central office, as New York is too far away from the points of distribution to be effective as a center for general management.

In New York, gifts are received, funds collected, purchases made and paid for and vessels are arranged for, loaded and dispatched.

London negotiates with the English authorities, collects gifts and funds, receives remittances for Belgium, keeps accounts of the cost of the various cargoes, establishes the prices to charge Brussels for the goods and advises Rotterdam thereof, and has remitted money to New York to help pay for purchases. In view of later developments wherein the United States government is to do the financing, money will be sent from New York to London.

Rotterdam receives the vessels, arranges for the barges, attends to the unloading, reloading and also to storing of goods, charging Brussels for all the goods shipped into Belgium and the north of France at the prices established by London, and advises London office thereof.

Brussels office negotiates with the German authorities and attends to the distribution of the food supplies, but the accounts of the C. R. B. at Brussels do not deal with food supplies, but simply with the expenses of its office and its branches, the expenses of the American or other representatives, automobile expenses and things of that character.

The American or other representatives, with headquarters at Brussels, are so many agents of the C. R. B. distributed around Belgium and the north of France. They are financed by the C. R. B. of Brussels.

Their functions are:

(a) To assist the Belgians and people of the north of France.

(b) To correct abuses.

(c) To carry out the guarantees.

It is well to note here that in organizing the C. R. B., the C. N. and the C. F., the plan was adopted of having practically all reports and records relating to quantities received or issued

kept by the statistics department, as distinct from the accounts department, the latter keeping, in addition to values, such quantity records as were closely connected with and necessary to the entries on its books.

New York Office:

The principal departments dealing with accounts are:

Purchasing department,
Transportation department,
Accounting department.

A summary of the principal records is as follows:

Purchasing. Several copies of each confirmation of order are issued when purchases are made: to seller, to accounting department, to transportation department; and a copy is retained. The copies for the accounting and transportation departments are ruled on the back to admit of entries showing the progress of deliveries. The sheets are filed by commodities and contract numbers.

The purchasing department keeps a record of contracts, which is a complete record from quantity purchased and from whom down to the authorization of the payment for actual delivery, in order to see that all goods ordered are consigned, unless canceled for good reason.

Transportation. The transportation department designates routes on shipments from points of origin to f. o. b. points and beyond to destination, seeing to it that all goods delivered to the commission are shipped to Europe. It advises London by wire regarding each steamer, when ready, as it clears. It makes no reports except as to tonnage on hand.

The principal records kept by this department are:

Manifest book, by steamers.
Record book of consignments of donations.
Contract files, being yellow copies of purchase orders.
Claim register.

When the C. R. B. is notified that a consignment of purchased or gift goods has been made for shipment direct to steamer, this department records the fact on a "primary record of consignments" a copy of which is sent to the commission's shipping

agent, who signs and returns it as receipt for the bill of lading, etc. Therewith he also returns a cargo list of actual merchandise loaded on steamer, which is used in making up the manifest book (by steamers) and the manifest, a memorandum of which is kept and filed with the steamer record.

Memorandum is kept of goods left over after steamer is full to ensure proper shipment later and against their loss.

Records of consignments of purchased goods are kept on back of the contract copies of order for this department.

Records of donated consignments are kept by committees, then shippers, car number numbers, etc., in the book for that purpose.

If case goods arrive at the commission's warehouses without notice from consignors, the warehouse representatives take them into stores, notifying the commission, which attends to the shipment in due course.

Other records are kept regarding consignments, their point of origin, etc.

Accounting. The usual books of account are kept by the accounting department including contract ledger (copies of order), voucher record, steamer record and stores record, arranged so that proper authority is had for the actual receipt of goods for which or their transportation and handling proper payments are to be made.

Summaries of invoices, showing cost of each steamer cargo, and weekly cash payments are sent to London.

Rotterdam Office.

The principal records of the Rotterdam office are kept by the statistics and accounting departments.

The statistics department deals with cargoes from their sailing date at point of departure, through their expected and actual arrival at Rotterdam, to shipment into Belgium.

This requires much detail on account of the many steamers, lighters, tugs, commodities and points of receipt for them in Belgium and north of France. Record must constantly be kept from charter parties and other data to ensure proper payment of freights, handling etc., of commodities, to see how much is on hand, how much en route, how much actually has arrived, how much has been shipped and the available balances. There must

be record of points of receipt to note against requirements, the amount permitted to enter, the amounts actually shipped and the balance still to send.

Recording of the inspection of cargoes landing, lighters loaded, the sealing up of loaded lighters, the storage in elevators or warehouses, handling and insurance of cargoes forms a part of the work of this department.

Daily reports are made to the management, by commodities, of shipments and general situation with Belgium and north of France, and also regarding the lighters and tugs available.

Brussels and London are kept advised of steamer arrivals, of the out-turn, in quantities, from steamers, and of lighters and rail shipments from Rotterdam. Brussels and London are advised by cost sheets, in quantities and amounts, and by control sheets of commodities shipped and on hand.

The accounting department keeps cash and other records usual to any business concern. In addition, some of the most important records or reports are noted in the following paragraphs:

The commission's customs agents report on the clearance of incoming cargoes and these reports are checked against other data in the hands of the accounting department.

Ship's statements with details and summary of Rotterdam charges are made up and sent to London as soon as is advisable after landing of cargo—say, two months.

As to those cargoes which have been completely shipped (or nearly so) or disposed of, the statistics department makes up completed cargo sheets from copies of cost sheets sent to Brussels. Copies of the completed cargo sheets are sent to Brussels and London. The cost sheets are summarized and totals agreed with those of the completed cargo sheets.

All payments at Rotterdam for freights, unloading, reloading, handling, lighterage, towing, office and other expenses are reported to London office.

London Office.

The central office records are kept principally by the purchasing and shipping, statistics, commercial exchange and accounting departments.

The purchasing and shipping department attends to the chartering of almost all vessels, sending copies of American charters

to New York and all charters to Rotterdam. Files for each ship's voyage are kept, wherein are filed the documents belonging thereto.

This department arranges all marine insurance and insurance on stocks in United Kingdom. It also passes freight and other charges for payment, and follows up overages, shortages, losses and damages on cargoes, claiming on these latter and advising the accounting department in due course.

Purchases in the United Kingdom are made and records kept of deliveries against contracts, passing bills for payment by the accounting department.

The accounting department is given a summary statement of each shipment from United Kingdom port as soon as possible after ship has cleared and invoices are received.

The statistics department receives information from all C. R. B. offices regarding merchandise at all stages—from requirements, probable and actual shipments, arrivals and stocks down to shipments into and receipts by Belgium and northern France.

These reports are mostly in quantities, using such values as are needed by this department in making up reports to the management for controlling purposes, for the prompt ascertainment of costs of commodities and for the valuation of stocks, and for the accumulated sales values of shipments by Rotterdam.

The commercial exchange department receives money for transmission to Belgium and issues sterling letters for Brussels.

The remitter fills out a request form, giving name of payee and address, etc., when seeking to transfer funds to Belgium.

The commercial exchange department hands him a receipt, notifying at the same time the London bank, the accounting department and the Comite National at Brussels, sending the latter also a slip to be returned when the payment has actually been carried out. When the latter has been received in London the remitter is notified accordingly. The C. N. keeps on file, in good order, at Brussels, the actual receipts for the money so paid out there.

London keeps numerous banking accounts in various currencies for convenience in making money transfers or payments in other countries.

The accounting department keeps the customary books of account, so arranged that the transactions of the various offices

show separately. This department has on file all the accounts statements received from the other offices. It keeps track of all funds received up to their final disbursement.

A feature of this department is its steamer files, one or more dossiers for each steamer, in which are summarized the cost values, etc., for each voyage. The details are first entered elsewhere, in turn again summarized for the month and year, so that the costs, sale price and profit and loss are agreed or reconciled with purchase, freights and sales accounts and with gross profit for the year respectively.

London keeping its accounts in £ s d had to arrange for converting Belgian francs into sterling so as to facilitate the accounting. Therefore the rate of fcs. 25.40 has been used between Brussels and London in all the charges and credits back and forth, except in regard to the sterling letters already mentioned. Dollars have been taken at $4.85 to the pound sterling, and florins at 12.03. When actual remittances of money occur between Rotterdam, London and New York, the current rate prevailing at that time is used.

All the accounts of the C. R. B. at New York, London, Rotterdam and Brussels are subject to audit.

The Comite National.

The Comite National is very closely affiliated with the C. R. B. It is divided into two departments:

(a) Provisioning department,
(b) Benevolent department.

(*a*) *The Provisioning Department*:

The provisioning department is the merchandising end of the Comite National. It receives from the C. R. B., Brussels, copies of the bills of lading from Rotterdam as handed to the various skippers for the shipments by their lighters. It receives the cost sheets for the goods in numerical order from Rotterdam, and also copies of the out-turn reports of the steamers. Later on it receives the monthly completed cargo sheets in duplicate.

The cost sheets enable the Comite National to charge the goods at once to the provisional committees or to the Comite Francais, which in turn charges the district committees in the north of France. The cost sheets are entered in steamer books to form a ready basis for checking the completed cargo sheets, for

these latter have to be certified by Brussels, and a copy is sent to London. The actual charges to purchase account on the general books for the goods and the credits to London are made from the totals of the completed cargo sheets, and those cost sheets not yet included therein at the end of any month are considered provisionally as being estimated purchases.

The C. R. B. at Brussels sends a bill of lading to the committees where the various barges are to unload and the committees pass them on to their depots. The Comite National, having also a copy, knows that the goods are shipped and sends bills for the goods so forwarded, charging provincial committees or Comite Francais and crediting sales account. Should, however, the goods go instead to stores or to mills, the billing is done only when shipment is actually made later on.

When goods are unloaded at destination, several copies of a receipt of shipment are filled out and signed by the C. R. B. representatives there or some other responsible person; copies are sent to the C. R. B., Rotterdam and Brussels, to the Comite National or Comite Francais and to the provincial or district committee. The skipper of the barge also receives a copy.

The provincial depot makes a daily stock report in quantities to the provincial committee of goods received, issued and balance on hand. Some of the provincial committees keep track of how much goes to each commune.

The provincial committee makes a white monthly stock report to the Comite National, showing in detail, as to quantities, the receipts as made up from receipts of shipment and from the bills sent by the Comite National. It also sends a gray monthly summary in quantities showing total receipts as per the white report and the totals issued to each regional depot for the period.

Each regional depot reports each month to both provincial committee and to Comite National on a green summary the quantities of goods received, issued and the balance on hand at close of month. The receipts should agree with the issues as per the gray report of the provincial committee. The districts and regions of the north of France report in the same way each month to the Comite Francais.

The representatives of the C. R. B. are responsible for seeing that the stock reports of the provincial committees and regional depots are properly made up and promptly sent in to Brussels.

These reports are summarized and sent to the C. R. B., London and Rotterdam.

The Comite National and the Comite Francais keep stock accounts of the goods in their own stores at various points, and also of goods at the provincial and district depots. The latter are controlled by means of the reports sent to them as above stated, so that they know what is at each point.

The communal committees advise the regional depots of their requirements and the latter advise the provincial committee. The latter authorizes the provincial depot to ship to the regional depots and at the same time authorizes the regional depots to ship to the communes. In the north of France it is done in a similar manner.

The provincial committees keep ledger accounts with the regional depots, charging supplies and crediting cash. Some provinces collect before actual shipment of goods. The regional depots ship goods to the communes and keep accounts with them in much the same way as has been described. Inspectors from the provincial office visit both regional and communal depots.

In the communes, families are supplied by each commune with cards to be used once a week at the depot or store when purchasing up to a certain maximum per person in the family, entries of dates being made on the cards by the communal depots or stores at the time of purchase. The communal depots or stores keep records of their sales each day and send to the provincial committee each month a summary, in quantities and amounts, of their transactions for the period.

The people in Belgium thus pay the communes; the communes pay the regions; the latter pay the provinces; and the provinces pay the Comite National. The Comite National supplies its benevolent department with funds; these are paid out as explained above, and so the wheel goes around, depending on the C. R. B. outside of Belgium to keep on collecting funds and buying and shipping goods.

After the C. R. B. had been operating for a time it was found that there were a good many Belgians in England and elsewhere who desired to send money to their relatives in Belgium. Arrangements were made whereby they were allowed to pay in money to the London office, directly or indirectly, London advising the Comite National, Brussels, by means of sterling letters. Thus

some of the money received by the latter, in payment for food products sold to the provincial committees, is paid out against these sterling letters. This acts, in effect, as money sent to London by Brussels and yet no money leaves Belgium. Not only has this helped somewhat to lessen the burden of the C. R. B. in collecting funds, but it has been estimated that 500,000 people provided for through these remittances, thus made available, were prevented from falling into destitution.

Milling.

All of the grain, either before or after going to the provinces or districts, has to be milled, and the milling accounts kept have been somewhat difficult.

Wheat quantities have been charged to these accounts at the wheat value, or theoretical quantities of flour have been charged at a price based on the same wheat value. After that credits of flour have been made to the account for flour coming from the mill, calculated at a unit price which would include the cost of the wheat and the compensation to the mill for its work, making a deduction also in case the mill retained and sold the by-products for its own account.

In calculating the theoretical quantities of flour going into the account and the unit price for the flour coming out, one had to take into consideration if 75%, 82% or 90% flour was to be milled. At the end of any period, after crediting inventory of stock still at the mill, disposition had to be made of the ultimate balance in the account.

Crop Adjustment:

A difficulty arose in the accounts in regard to the mixture of native and foreign wheat. The Bureau des Recoltes handles the native wheat, which is lower in price than the foreign. The Germans agree to furnish native wheat in given proportion to the foreign. The C. R. B. has to report each month to the Germans the cost of the foreign wheat, on which is based the price used by Rotterdam in billing Brussels. The Germans then calculate an average price for the mixture, at which price all the wheat must be sold.

Inasmuch as the wheat grown in one province could not be sent to another, it stands to reason that those provinces not rais-

ing wheat would not participate in the low price of native wheat, unless the price of their foreign wheat was lowered . The actual quantities of foreign wheat sold can never exactly agree with the theoretical quantity on which the average price was based. An adjustment subject to approval by the Germans was devised as follows:

> Provinces to be charged and Comite National crop adjustment account credited for the quantities of native wheat they receive at the difference between the price of native wheat and the average price; whereas
>
> The Comite National crop adjustment account was to be charged and provinces credited for the quantities of foreign wheat they received at the difference in price between the foreign wheat and the average price.

On account of the excess, or vice versa, delivery of foreign wheat sold there will be a small profit or loss in this account each month.

The Benevolent Department.

The operations of the benevolent department are divided into ordinary and extraordinary, the broad distinction being that those of the extraordinary department are for account of the Belgian government, while those of the ordinary department include all other transactions, mostly of a charitable nature.

Food, clothing, money and shelter are provided by this department, which gets a credit from the Comite National of many million francs per month to pay for them.

Food is issued by communal committees for which money is given the provinces to buy the supplies for the soup kitchens, a large part of the food coming from the various provisioning department depots. Shelter is provided by these committees, to pay for which they also receive money.

Clothing is supplied by the clothing department, which buys new clothing, receives clothing from outside Belgium, and cleans, alters and repairs used clothing, necessary money for doing which comes out of the benevolent department funds.

Money is paid out in a variety of ways—to aid the unemployed, to relieve the families of soldiers and officers, to assist charitable institutions, to finance provinces by providing the equivalent of

taxes which had been collected by the government and to which the provinces were entitled, so as to help them in their work, to carry on schools (this for a short time only), to lend to banking institutions in order that they may pay military requisitions given to the populace at the beginning of the war, and pay salaries of railroad employees, all of which makes up part of the general scheme of helping others to help themselves. Where possible, the money or a large part of it, eventually goes toward the purchase of food and much of it comes back through the communal, regional and provincial committees to the Comite National, provisioning department, and is again handed over to the benevolent department, and so on.

Any profits made by the C. R. B. and Comite National, etc., are to be used for benevolent purposes.

Every month statements of expenditures and a balance-sheet are made up for the benevolent department and are subject to audit.

THE PROVINCIAL COMMITTEES—BELGIUM.

There are ten provincial committees in operation in Belgium. Each of these has separate headquarters, storehouses, staffs and sets of books. Each provincial committee (except Brabant) is supported by a co-operative society, the participants in which are individuals and sometimes communes. It is understood that any profits are to used for benevolent purposes, except a reasonable rate of interest on the money furnished, said to be about 5%.

These committees have raised outside loans to assist in their financing. They have current accounts with the Comite National, the balances of which are confirmed each month.

Prices to them are fixed by periodic agreement and should be approximately uniform, the excess freights of some provinces over others being rebated to them. The provinces charge to the communes at a small advance, and the latter are supposed to resell to the population without profit.

The resources of communal committees have been received from:

Local charity,

Cash subsidies from communal authorities,

Cash subsidies from regional or provincial committees, and from the C. R. B. representing gifts from abroad.

Some of the provincial committees have set aside considerable sums out of profits for benevolent purposes, as shown in their accounts.

The Comite Francais.

The Comite Francais is a separate organization formed in order to group or centralize the north of France transactions as a whole.

The plan of its organization has been mentioned already. It has separate storehouses, a separate office staff, and a separate set of books, etc., and is charged by the Comite National for all stuffs sent to it or to its districts in the north of France. The Comite Francais itself invoices to the districts.

It receives stock reports in quantities from the districts and regions and controls them in practically the same way as the Comite National controls its committees.

Up to September 1, 1915, the Comite National had been charging goods to the Comite Francais at a slight profit, the same as to the provincial committees, but it was decided that all such profits should be rebated to the Comite Francais and this was done, the Comite Francais in turn distributing the bulk of the rebate to the district committees since.

The Comite Francais draws off a trial balance from its books each month, from which periodically a balance-sheet and profit and loss account are made up and subjected to audit.

The District Committees—North of France.

The ten district committees or sub-committees are organized in much the same way as the provincial committees, except that actual financing cannot be done, and therefore there has been a more or less wholesale scheme of obligations all around, promising to pay shortly after the close of the war.

Owing to the state of affairs, naturally, there is great restriction in regard to moving about the country on the part of individuals, which makes business transactions much more difficult than in Belgium.

The district committees have separate accounts, the current account balance with the Comite Francais being confirmed at the end of each month.

The Section Agricole du Comite National.

The Section Agricole is a consulting and administrative body to the various agricultural sections of the provincial committees, which aid farmers, obtaining the funds therefor from the benevolent department of the Comite National.

The Bureau Produits Divers.

The Bureau Produits Divers was organized to take up the work of importing goods outside the regular staple lines of the C. R. B. and Comite National. It was allowed to import up to frs. 1,250,000 worth per month.

It was financed by the Comite National. The provincial committees sent covering cheques with their orders for goods. It had a small separate working staff and a separate set of books, reporting to the Comite National. It is now discontinued.

The Ship Owning Department.

The ship owning department, sanctioned by the C. R. B., was started for the purpose of owning and operating barges and tugs in the interest of the C. R. B. It is under the control of the Antwerp committee but financed by the Comite National. It will have assets and liabilities on its books and an operating account, the income being derived from a moderate rate to be charged to the Comite National for lightering and towage, the expenses incidental thereto being charged against the income. All profits or losses are to be for the account of the Comite National.

General.

In the final accounting the leading committees will have to render statements which will clearly show what funds have to be accounted for and what disposition has been made of them.

The C. R. B. should show the money and money values received, plus profit made, against which should be shown merchandise, etc., supplied to the Comite National, less any benevolent expenditure made for account of the C. R. B., together with any assets still on hand, such as stock, cash, debtors, etc., less creditors if any.

The Comite National should show the amount of merchandise and cash received from the C. R. B., plus profit made, against which should be benevolent expenditure, merchandise and cash

supplied to the Comite Francais and also any assets such as stock, cash, sacks, provincial committees and other debtors, less creditors, etc.

The Comite Francais should show merchandise and cash received from the Comite National for account of the C. R. B., plus clothing values or rebates received and profits made. Against this should be shown the amounts owing by district committees or others, amounts donated to various committees, plus cash or evidences of indebtedness, stocks and sundry debtors, less creditors.

Operation of the British Excess Profits Duty Law

By Maurice E. Peloubet

It will, I think, be recognized everywhere that the legislation adopted in England shortly after the outbreak of the great war, and retrospective to the beginning of hostilities, for the purpose of limiting abnormal profits, due to the war, was a departure in financial legislation which, while urgently necessary, was at the same time bold, new and opposed to some of the most strongly marked tendencies in British commercial and financial, to say nothing of economic and social, life.

For a nation so extremely individualistic as the British, much more so I think than is the case with the United States, to submit to a form of taxation which involved rigorous control of practically every business and the taking over by the state of from 50% to 80% of a large proportion of what the proprietors of those businesses thought was mostly the result of their own efforts calls for respect for the taxpayers' patriotism and far-sightedness in submitting quietly and with considerable good nature to the impost. No less does the adoption of such a measure by a government nominally devoted to free trade and the "laissez faire" principle, although with true British love of practicality and compromise it had fathered some projects which could hardly be distinguished from advanced state socialism, demand our admiration as a piece of courageous and constructive statesmanship.

It would be surprising, however, if such a measure turned out to be perfect, or anything approaching it. The excess profits duty has always been a workable and productive source of revenue. It has undoubtedly had a calming effect on labor. It has now been in operation so long that changes in fundamental principle are practically impossible. The only use therefore in pointing out the weaknesses of the British system of excess profits duty, which I believe is much superior, in practice, to the French or other European systems, is to make use of British financial and economic mistakes and experience, as we have of British mistakes and experience in other lines of war effort.

The main features of the British excess profits duty are:

(1) The figure for normal or "standard" profits is, in most cases, based on an average of any two of the last three pre-war years.

(2) The taxpayer was allowed to retain at first 50%, then 40% and now, from January 1, 1917, onwards, 20% of his profits above the normal in addition to,

(3) A percentage on net increase of capital, at first 6% and from January 1, 1917, 9%, increased in special cases, such as those of rubber companies whose plantations have come into bearing after the outbreak of war or of new business begun after the opening of hostilities, to as much as double the statutory rate.

and, finally,

(4) In many cases very large so-called "depreciation allowances" have been made.

In all the following discussion it must be constantly held in mind that in a country at war, in the modern sense, the government is both producer and consumer and buyer and seller, besides being the universal employer.

The management and directors of a business are merely a higher grade of state servants and their remuneration should not be regarded as the "profits of the entrepreneur," "wages of capital" nor in any way other than as the payment by the state for services rendered to the state with state property. For convenience, much of the old forms and terminology is of course still retained, but everyone in England realizes that his life, time and money are at the disposal of the state at any time.

The great objects, then, in any law similar to the British excess profits duty, are to ensure a fair and equitable reward for formerly independent business men, managers or directors; to make sure that any increase of this reward is based on real service rendered, i.e., increased production or efficiency, and not by taking advantage of conditions or opportunities in the creation of which they had no part; and to make certain that increases of prices are solely due to real causes, difficulty of transport, scarcity of raw materials or actual increased living cost, rather than to any financial causes or to manipulation of markets.

The British excess profits duty, to a large extent, does all these things but falls short of complete success, chiefly on account

of the method used in calculating "standard" profits; because it allows a portion of the excess profits to be retained and because in general the provisions of the law relate, almost solely, to the financial side of business rather than to the productive or operating side.

The fixing of standards for two companies in the same line of business, say $100,000 each, might work out as follows:

Three pre-war years:

Years selected by taxpayer:

	Co. "A"		Co. "B"
Year 1911	$10,000		$7,000
1912	9,000		8,000
1913	8,000		9,000
Year 1911	$10,000	Year 1912	$8,000
1912	9,000	1913	9,000
	$19,000		$17,000
Standard profit	$9,500		$8,500

Co. "A" clearly is declining and, presumably, is becoming less efficient in operation while Co. "B" plainly is advancing.

Co. "A," however, for four or more years gets the benefit of a good year in 1911 while Co. "B" for the same period is penalized for mistakes committed in 1911 and 1912 and righted in 1913, besides getting nothing for what may be taken as a normal rate of expansion or improvement.

If, as is usually the case, both companies are on government work, there can be no question of normal expansion, ordinary work being stopped. Whatever expansion takes place is to take care of government orders. The pre-war profits of the individual companies are no criterion of what their profit on government work should be. Present production and efficiency rather than past good luck or good management are what should rule in fixing the reward for work performed under war conditions.

Yet some standard must be adopted and can only be arrived at from past results. It should, however, be so broadly based as to form an index of the normal profit earning capacity of the capital employed, not in an individual business or undertaking, but in a trade or industry taken as a whole.

The method of computing the amount of capital employed by a company under the British excess profits duty law is sound theoretically both from an economic and accounting point of view, and the information can readily be extracted from any ordinary set of financial books. The capital employed is taken to consist of:

1. Share capital;
2. The difference between accounts payable and receivable added or deducted as the case may be;
4. Reserves;
5. Profits retained in the business.

Assets not used in the business are eliminated and if a company were carrying forward a deficit it would be treated in the opposite way to profits retained in the undertaking.

With this information as to capital and the figures for income all on a uniform basis, as shown by income tax returns, the taxing authorities are in a position to determine what percentage should constitute a fair return on capital employed in a particular industry.

The present method of making adjustments of the rate of return on capital for special industries is really an application of this principle and proves it to be practicable.

It is, of course, true that there is a board of referees provided for by the finance act to hear appeals for increases in the statutory percentage or in the case of certain inequitable assessments. This board, however, deals with one variety of claims only—namely, where the standard or percentage is too low. Of the assessments where the present system is unduly favorable it is safe to say none has ever been appealed against. The beneficiaries certainly would not appeal. The taxation officers can only enforce the law as it stands, and competitors have no means of getting the information on which to found a protest or appeal.

It is these cases, however, which are the sources of the extravagance and inflation due to the excess profits duty law.

If the standard as suggested above were applied and any increase in the profit allowed made contingent on and proportional to an increase in production or turnover, in goods not money, a reward for efficiency and energy would be provided which would ensure that these were devoted productively rather than to market manipulation or to securing a high selling price for the finished products.

No fraction, however small, of the excess profits, i. e., profits above the standard for the trade or business modified by the production of the individual company under review, should be retained by the taxpayer. If any part of such excess is retained the taxpayer will simply raise prices sufficiently to cover the tax and the increase desired as well. If no part of the excess is retained and the increase allowed is fair and liberal there will be no advantage to the taxpayer in inflated prices, while a financial reward will be given for increased production.

Under the present system there is a strong and direct incentive to raise prices and the smaller the percentage retained the higher will prices go.

The fact that the government, being the purchaser, pays with one hand and, being the taxing authority, receives with the other seems to cancel the two amounts. If this were the case the transaction would be merely ridiculous—but it is far worse than that, for between payment of the price of the goods and collection of the tax a long period elapses during which the amount of money in the country is greatly increased and a large sum is placed in the hands of firms out of which payments are made with great liberality for "repairs," "renewals," "improvements," "renovations," etc.

At the same time a feeling of great generosity toward employees, especially managers, departmental heads and executives generally, seems to come over the company. Directors' fees are raised, bonuses and commissions are put on a higher level and everything is easy and liberal. It is not quite such a strain to be liberal where the government pays from a half to four-fifths, and it is a matter of very great difficulty for the taxing authorities to decide which of these various extraordinary payments are legitimate and which not. As a rule, all but the most flagrant instances are passed by the revenue authorities as expenses, deductible from the taxable profits.

What a firm cannot use in this way, it can leave in the business and get 9% on or deposit on account of payments to be made and get 5% until the tax is assessed. It can also buy war loan, say it is money held in reserve and get the interest on the loan, count its holding as increased capital and deduct interest received on loan from interest at 9% on the amount and deduct the difference from its taxable profits.

It can thus be seen the government pays interest on its own money until it collects it.

This system not only raises prices in particular industries but raises them generally by causing inflation of the currency. Although the American securities scheme, whereby substantially all the main American securities held in Great Britain have been bought by the government and sold in the United States, has kept the exchange rate on New York almost to the gold point, considering the increased cost of transportation and insurance, there is undoubtedly very considerable inflation of the currency in England—surely as much and perhaps a little more than that indicated by the various exchange rates.

The government also tacitly permits, occasionally unwittingly, the cost of whole plants to be taken out of what would be taxable profit in two or three years, especially in the case of aircraft or munition factories. It thus puts itself in the position of paying for these plants and not owning them, which is certainly a liberal method of providing for increased facilities if nothing else.

It is to be hoped that the United States government will not stumble into any of the pitfalls into which the early framers and administrators of the British excess profits duty law fell. They can, I think, all be traced to the fixing of a standard based on past results of individual companies, allowing any portion of the excess profits to be retained, increase of profits following increase of price, rather than increase of production or efficiency, and what amounts to payment for plants which did not then become government property.

It is easy, and so far as England is concerned useless, to criticize past mistakes in regard to the excess profits duty law. That law has worked better than anyone thought it would and was a measure of courageous and far-sighted statesmanship. I believe, however, that some of these facts pointed out may help in forming a public opinion which will tend to prevent the United States government, in attempting to copy the good points of the British excess profits duty law, from adopting the less advantageous ones.

Reconstruction Problems*

By F. W. GEHLE.

Mankind faces the future with no greater desire in its heart than to secure a glimpse of what is to be the aftermath of the war. There never was a more vital hour than that in which we are living. Having for more than four years struggled through the greatest war of all the ages, we have crossed the threshold of peace. Where lately we were thinking in terms of cannon, bayonets, war supplies and front line trenches, we have come suddenly to think in terms of reconstruction.

Our minds will not grasp the completeness of the change that has come about until the millions of men who are enlisted in France have returned from the battlefields to their homes and firesides. It will not be until then that we shall grasp the full magnitude of the task of making the world completely over.

In magnitude and importance nothing ever approached the problems that have risen to confront us. Some of these problems are wholly new. Others are old, in new aspects. They resolve themselves into five classes: moral, social, international, economic and financial.

Morally, socially and politically, the problems that face the world are so formidable and so involved in their nature, that we have no present way of judging how the future will solve them. This war was the crisis of a thousand years of history, and the degree in which it will bring about the consummation of society's ideals is so vaguely defined that statesmen to-day do not even hazard a guess regarding what is before us. Society has been and is being made over, in every sense, and on the completeness with which the allied statesmen who are now gathering in France build their foundation of peace on right doctrine, on justice and wisdom, will depend in a large measure the completeness with which society attains its ideals.

Human ideals are based, in the very nature of things, on certain fundamental principles. Hence, out of this war must come a vindication of these principles. That is why at the very

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beginning of peace, problems will have to be settled involving reparation and punishment for the wrongs of this war and establishing guarantees for the world's safety in the future. Problems will have to be solved of alliances and pledges, of ties and enmities of recent birth, of friendships of long standing and hatred stretching back to antiquity. Problems will have to be settled—unless a way is to be left open for another world war speedily to follow this one—of governments, territories, boundaries, creeds and races.

Embracing, as it did, so vast a portion of the earth's surface, and having entailed such an unparalleled sacrifice of blood and treasure, the war must inevitably bring about government and territorial readjustments of far-reaching importance. That is plain to everyone. Readjustments of boundaries are certain to be made through the whole eastern hemisphere, just as readjustments of thrones and rulers have already been made. Affecting particularly Germany, Austria-Hungary, Russia, the Balkan states and Turkey, and taking in parts of Asia and Africa, these readjustments will be powerful factors in determining the condition of internal politics in all nations and of international policies in all the world.

These comprise one group of factors. There are other factors as well. Within a very short time, now, we shall have to take account of the lowered standards of existence that have come from having tens of millions of men revert to the primitive, both in defending and taking life. We shall have to take account of the check that has been given to education, law, literature, art, religion and all those measures of civilization that contributed to carry mankind forward, prior to 1914, in every sphere of endeavor.

The Economic Problems.

The moral, social and political sequel of the war offers one formidable group of problems to absorb our minds and efforts from to-day forward. There are to be considered the economic problems and the financial problems as well. The world will have to consider these very seriously. The war's economic problems will have to do with such things as reconstruction and rehabilitation, with supplies of goods necessary for life, with commerce and industry, with international trade, with labor, with prices, with government control and labor restrictions and with the rights

of property and individuals. The financial sequel will embrace those problems which govern capital and credit, state debts and currency inflations, taxes, deranged gold standards, the foreign exchanges and the national and international banking relations.

As with statesmen in their attitude toward the future of political and social problems, so with bankers in their attitude toward these other problems—the answers are too vaguely defined to permit any confident prediction, or more than expressions of hope and purpose. All the problems confronting the world are so immense that one's mind staggers at the contemplation of them all. Because of their magnitude, and because of the frightful wastage entailed by the war, they will not be solved in a week, or a month, or even a year.

Justice cannot be established with the speed with which it was overthrown. Terrible wrongs cannot be atoned at once. Territorial readjustments cannot be determined out of hand. Governments and dynasties cannot be destroyed and replaced in a single operation. The vast and intricate war machine that has been built up cannot be taken apart immediately. Armies of tens of millions of men cannot be demobilized and returned to productive industry by a simple executive order. Ruined cities cannot be rebuilt without effort. Economic progress cannot be restored as quickly as it was arrested. Financial expedients cannot be abandoned as readily as they were called into being.

In view of the future trials and tests which the summaries that I have given indicate for the world, it will be judged that the process of getting back to normal is destined to involve supreme difficulties for the nations. Let us for a moment confine our thought to what confronts the United States. That our difficulties will be colossal will be accepted, I believe, without dispute. They will not be so colossal as the difficulties of the nations of Europe. Nor will they be of the same character. The United States was the last of the great powers to draw the sword and is the least weakened of the nations. But, paradoxical as it may sound, it is by very reason of our favorable position that some of our greatest problems will arise. All nations of the earth look hither to-day for their help and strength, and in satisfying their requirements we shall have imposed upon us not only great opportunities but vast responsibilities as well.

The task of releasing the nation from its war tension and returning it to a basis where it will meet the requirements of ordinary affairs is one that will not be simple, nor easily within our power. It is in industry that the change from war conditions up to this time has been most visible and pronounced throughout the United States; hence the most pressing problems we face at the moment are industrial in their nature. Up to a few weeks ago all our thoughts and efforts, together with our tremendous forces of production, were devoted to the output of goods needful for the prosecution of the war. Those goods were so urgently in demand that our factories and labor were turning them out at a rate of forty to fifty million dollars a day. To-day those goods are no longer in demand, except in such quantities as may serve the United States army and navy on a peace basis.

We all want to look forward in the months immediately before us to a period of good times, with business in a vigorous, uplooking state. But can such a period be immediately ahead, while plants are being readjusted from a war-time to a peace-time basis, and while the world is still bewildered with the rapidity with which epochal events are occurring? The world's disorders of more than four years have drawn us far out of the beaten track of our lives, and it would seem that we could not, without a wrench, return to normal life as it was lived before the outbreak of the war.

An automobile speeding over a road at 60 miles an hour cannot make a right angle turn without slowing down, and industry in the United States can hardly be expected to make the turn into peace pursuits without very definite adjustments.

Roughly there are 8,000,000 war workers of one kind or another in the United States. There are more than 3,000,000 men in the army and navy. The mustering out of both the industrial war army and the military forces will be a gigantic task, and although those just now released are readily finding employment, none of us can be so sanguine as to expect that all the millions of men and women will be absorbed into peace-time industry promptly and at present wages and hours of employment.

However, it is not my purpose to say things here that will suggest that bankers generally are depressed and disquieted regarding the outlook. In all those seasons of depression and doubt which alternate with periods of optimism and confident assurance

regarding the future, the fallibility of man's reasoning is made painfully apparent. On all big questions it has always been thus, and until experience has perfected human intelligence in all things, on big questions and little it will always be thus. In the present situation men's opinions differ widely and seasons of depression will lead to one kind of reasoning while seasons of enthusiasm will lead to quite another.

This present season ought not to be for any of us a season of depression. Concerning the outlook as it is to be scanned to-day, I will admit that one prospect appears to contradict another. That simply shows the complexity of the circumstances coming out of the war. I have said that all nations of the earth look hither to-day for their help and strength. And yet we must admit that the immediate future holds out to the United States two possibilities. On one hand, we must frankly admit that there is the possibility of an industrial setback. On the other hand we must recognize that there is the possibility of an industrial boom greater than has been seen at any time before.

One can argue plausibly for one prospect and logically for the other. Let us try it briefly. For instance, let us take the disquieting possibility first. The grounds for looking forward to an industrial setback may be briefly presented as follows:

1—Peace has deprived munition plants of a market which has been taking millions of dollars' worth of material daily. The war demand for shells, cartridges and guns will hereafter be as nothing by comparison with the recent demand.

2—The European nations, to re-establish themselves in the markets of the world, will henceforward use every means at their disposal to win back what they have lost since the middle of 1914. There will be a peremptory demand for the immediate employment of thirty million men released from fighting. The desire to plunge again into work to restore some of the appalling losses inflicted by the war disaster will be overwhelming.

3—Necessity for regaining lost commerce will lead to an effort to undersell American manufacturers, not only abroad, but here in our own home market. The assumption that the people of Europe will be so poverty-stricken that they will sell for anything conjures the picture of a whole continent making a united

effort to flood the markets of the outside world with merchandise, sold at prices against which American manufacturers cannot compete.

4—Poverty and tax burdens will be such that a tide of emigration will set in strongly to the United States, to disorganize conditions here. Many of the lower classes of central and southeastern Europe would come now were there means of leaving the war-ridden countries. Means will be restored after peace is signed. Then we may expect a horde of people who for a long time cannot be assimilated and will consequently cause grave disturbance and dislocation of industry.

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That is one side of the argument, the disturbing side, which you will note, sounds a dirge for American prosperity. Here is the other side: that which looks to the future with hope and confidence:

1—There is about to dawn in Europe an era of reconstruction and redevelopment on a scale never before witnessed in the history of the world. France, Belgium, Italy, Russia, Rumania, Serbia, Austria and Poland all have been invaded. All will need material to make good the ravages of war. In the part of France that was under German occupancy complete rehabilitation will be required. Belgium will have to be built all over again, industrially. Restoration of cities, factories, dwellings, bridges and warehouses elsewhere will require material beyond any present estimate. In every part of Europe the first duty will be to the restoration of the heart of industry and the arteries of commerce.

2—The United States is the only great industrial nation equipped with working forces, plant facilities and capital sufficient to turn out immediately what Europe will want at once. Orders must be placed with us for enormous quantities of raw material, for steel and iron and other metals, for lumber, grain, cotton, provisions and a thousand things with which to restore a continent to a semblance of its former self.

3—With able-bodied men pitifully reduced by loss of life and limb, Great Britain and the continental countries will not be able to command cheap labor and turn out cheap goods for export at a profit. Dependence upon the labor that remains will mean higher

wages. Higher wages will at once cut off the advantage that was in other years a determining factor in establishing Europe in the world's export market.

4—Higher wages abroad will overcome the tendency of emigration to the United States.

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Any man can measure one group of arguments against the other and come to one or another conclusion—whichever he desires. An industrial collapse or an industrial boom greater than any seen before—one extreme or the other may be selected as America's destiny.

My personal belief is that the answer will be determined by the urgency of Europe's need for our goods, plus the ability of the United States to extend credit to enable Europe to satisfy that need.

Temporarily we shall have a period of uncertainty, with wage readjustments and with, perhaps, a certain amount of unemployment. But that will be only temporarily. The whole world will presently be knocking at our door for material with which to reconstruct destroyed cities, railroads and factories. In satisfying the demands to be made we shall have the greatest opportunity ever placed before any industrial nation in the history of the world. The part to be played by the United States in the reconstruction period will be a dominating one.

Our new financial position, which will have much to do with bringing all this about, is already established. Since the outbreak of the war in 1914, the United States has shipped abroad 22 billion dollars' worth of food and manufactured materials and has imported only one-half as much. We have taken payment for nine-tenths of the balance in securities and notes. Is this not significant of what we are going to do in the future? England at the pinnacle of its financial fame never extended credit as we have done.

There are those who say that the United States, with development of its own resources making large demands upon capital, cannot for years to come be economically fitted to supply the world with capital. To them one need only point to the figures I have quoted, and to the credits the United States has placed in the hands of the Allies, since the war began. A little

more than four years ago we were a debtor nation, heavily obligated to foreign lenders. Now we are a strong creditor nation. Something like three billion dollars' worth of American securities, previously owned abroad, was returned to this country before our entrance into the war, and in addition 1¼ billions of gold were sent in payment for our products, while 2¼ billions of foreign government loans were secured here. Since our entrance into the war upward of 8½ billions have seen borrowed here on foreign credits, directly from the government, and additional credits are being regularly extended by the United States treasury.

We have gained a financial independence never before experienced. We have canceled our European debt while Europe has piled up her debt with us. Equipped with an elastic currency system, the part to be played by the United States in the reconstruction period will, it is my firm conviction, be a dominating one. The extraordinary showing of power in face of the political and economic convulsion of the past four years has given the United States a new financial prestige, and our strategic position, economically and commercially, will be stronger with each month that elapses after the close of the war. Our leading men of affairs are thoroughly alive to what is before them. It is for the rest of us to do some right thinking and right planning.

The war, I believe, has been the making of the American nation. Events and developments since it began have been tremendous, and there is promise of much more. A little while ago we reckoned our accounts in hundreds of thousands and in millions. Now we are reckoning in units of billions. We have ceased to think within the limits of sections or even of our own continent: we have come to regard the world as the scope for our sympathies and the field for our enterprise, while all humanity has become the rightful object for our planning.

America is to-day the world's unconquered hope. The war opened to our vision a new glory and greatness and power. It saved us from losing our head in the whirlpool into which we were tossed; it brought us up with a sharp turn and we shall now maintain the efficiency of which we are capable.

We frequently heard it said, before April, 1917, that we were inviting the wrath and hatred of the people of Europe by our cold-hearted indifference to the suffering of the war-stricken countries. If there was danger of that, that danger was removed

when we took our rightful place in the war. We have now shown the world the scope of our wonderful resources and the intensity of our application to the project of a war for humanity. We will henceforward show how capable we are as a nation to apply those same resources to the project of upbuilding the structures of humanity.

Let us admit that there will be a selfish motive in all that we do. We need not be ashamed to do that. We shall prosper as nations abroad, that are our customers, prosper. But remember this: we ourselves cannot prosper if it is our ambition and purpose to take every possible advantage of other nations, not so well off as ourselves, in a ruthless manner. Nations over-sea will not be beggars of the United States in any sense of the word. They will be customers. And the degree in which the United States shall become a nation of world tradesmen and world bankers will be determined by the manner in which we grasp the opportunity of treating others not as beggars but as respectable customers and purchasers of our goods.

The manufacturer, the merchant, the export commission broker, the banker, the transportation man, the producer from the soil, the miner—aye, the accountant as well—all these must alike look forward to deriving a benefit upon the conclusion of peace—not only a personal benefit, nor even a national benefit, but an international and world benefit.

Foreign purchases in the United States of the future, more than ever of the past, will be paid for with credit. Shipment of gold hither in exchange for goods will be made only in so far as we command that shipment by the refusal of credit, and will be limited in any case. Means of immediate payment for all that Europe requires will be lacking, and, if there is no substitute for that means, we know that purchases will have to be curtailed. If Europe, which is and must for many years to come be our chief customer, curtails its purchases, our trade will languish, men who are employed will lose their work and prosperity will give way to hard times. Just as we cannot forever count upon a prosperity that springs from the calamity of other people, so we cannot count upon taking advantage of that calamity. If we are to have growing commercial relations with the rest of the world, we must cast aside insular habits and prejudices, and provide the rest of the world with the means of paying for

products bought from us. We must accept promises to pay, and grant easy terms. We must accept as collateral the character, integrity, industry and skill of the people with whom we trade.

In that way only, by earnest, willing co-operation, shall we grasp firmly the great opportunity that is before us.

Outline of a Cost Accounting System for a Wooden Ship Yard

By Frederick W. Davis

Employ your time in improving yourself by other men's documents; so shall you come easily by what other men have labored hard for.—Socrates.

The writer has had twenty-five years' experience as an accountant and during the past year and a half has done a great deal of war work cost accounting in several large plants in various parts of the country. His work has taken him into two ship yards: one at Camden, N. J., where steel ships are being produced, the other on the Jersey meadows where ten wooden hulls of a uniform type were constructed. This type is known as the "Ferris hull," of an estimated dead weight of 3,500 tons, 281 feet, 6 inches in length and 46 feet beam over planking.

The cost accounting system hereinafter outlined while primarily intended for use in wood ship yards can also be used, with modifications, in steel ship yards.

As the ship-building industry bids fair to be one of the most important throughout the world for the next decade the writer feels that an article on the subject at this time may be useful to many cost accountants, particularly in this country. The system outlined in the following pages is in accordance with the views of the Emergency Fleet and United States government accountants, as the writer interprets them, and he does not claim to be its originator. He regrets that lack of space in this magazine prevents the publishing of all the forms which should accompany the article.

The question as to which is the more efficient of the two types, the steel or the wooden hull, is an interesting one and has precipitated more than one row in Washington. The general impression gained by the writer is that there is need for both types in this country, the wooden hulls of 3,500 tons burden or thereabout being especially adapted for coastwise trade and our commerce with South America and Canada. Tug-boats and barges can be constructed more economically from wood than from steel and seem to stand up better for the work for which they are intended. It has been found by experience that it is impractic-

able to build wooden hulls, equipped with propellers, of more than 4,000 or 5,000 tons burden, for the purpose of crossing the ocean, as the hulls cannot stand the pounding of the screws as well as the steel ships. It costs about as much to operate a 3,500 ton vessel as it does to operate one of 5,000 tons or more carrying capacity. The speed of the steel ship is much greater than that of the wooden one and time is frequently the essence of contracts.

Old and experienced shipbuilders have told the writer that a well constructed wooden hull is apt to last for 50 years of service, barring accident, while it is doubtful if steel hulls will last that length of time. The cost of raw material is greater in steel ships than in wooden. In these days of high freight rates the writer believes it to be impracticable to maintain wooden ship yards at any great distance from the source of supplies. There are four districts in this country which are eminently suitable for wooden ship building, viz. the states of Maine, Georgia and Washington and the great lakes district.

This great question is beyond the province of the accountant and must be settled by the authorities of the United States shipping board, their engineers and superintendents.

Too much stress cannot be laid upon the value of a technical knowledge of any business upon which the cost accountant may be engaged. The average public accountant knows very little about cost work in a ship yard unless he has been engaged in such work. If he desires to obtain a practical knowledge regarding wooden shipbuilding he is recommended to secure the following named works:

How Wooden Ships are Made by H. Coles Estep, former editor of the *Marine Review*, published by the Penton Publishing Co. of Cleveland, Ohio.

A Practical Course in Wooden Boat and Shipbuilding by Richard Van Gaasbeek, published by F. J. Drake, of Chicago. The latter contains many photographs of the yard in which the writer is at present employed.

The only work on shipbuilding accounting that the writer has been able to discover thus far is a small volume entitled: *Engineers' and Shipbuilders' Accounts* by Francis G. Burton, being volume XIV of *The Accountant's Library*, an English work published by Gee & Co. of London, 1911. This may be re-

garded by many as being somewhat out of date at this time, but will well repay a careful study. As the book is difficult to obtain on this side of the water the writer takes the liberty of making an extract which will give the reader some idea of the style in which the book is written:

Professor Dicksee, in his *Bookkeeping for Accountant Students,* says two objects have to be arrived at:

(1) That the record be so explicit that, at any subsequent time, the exact nature of the transaction may be readily perceived without the aid of memory.

(2) That the transactions should be so classified that at any time the total result of such transactions during any given period may be readily ascertained.

The business of a shipbuilder or engineer presents peculiar difficulties in this respect. Within the same yard there are numerous different trades —shipwrights, millwrights, blacksmiths, moulders, machinists, platers and rivetters, fitters, joiners, pattern makers, painters, &c. The cost and value of the work of each of these trades must, in some way or other, be ascertained, whilst at the same time a record must be kept of the cost of each contract, and sometimes of sectional portions of contracts. It will readily be perceived that such conditions demand modification of the nominal accounts in the financial books and the provision of special statistical or memorandum books. In well regulated engineering firms elaborate cost accounts are kept; in nearly all some attempt is made to ascertain the prime cost of work executed; but, alike in the more elaborate and the less pretentious cost bookkeeping, misleading errors frequently arise through an imperfect system and an improper allocation of establishment charges being pursued. This is particularly unfortunate, because of the many purposes for which such accounts are used. Although it may appear paradoxical to the shareholder or the auditor, it is, nevertheless, perfectly true that the superintending engineer makes far more use in the management of his business of such cost accounts as he may possess than he does of his nominal ledger or other financial books. The reason is not far to seek. Whilst a textile manufacturer or textile merchant is guided and limited in his transactions by his immediate market (which market is a definite price for a definite article), the engineer has to consider a number of complex factors extending over a long period, which, at best, are only partially represented in his trading account—a fluctuating market for materials; the existence of patterns or the cost of making them; the prospect of labor troubles; the extent of purchases of finished materials which will have to be made; and the time and machinery which will be occupied in the constructions. Some of the tenders he is asked for have to be rendered within a very limited time, and if he can readily consult the records of previous similar (or analogous) structures, the task of fixing his tender price will be considerably lightened. Again, after the contract is signed, it is desirable to compare the progress of actual cost with the detailed estimate, so that expenditure which is progressing on certain portions at an undue rate may be curtailed, or a more liberal interpretation given to other portions of the specification on which profits are accruing greater than those anticipated. In some constructions, like that of a large ocean steamship, there is generally a margin on such items as cabin fittings, stores and spare gear; whilst the alteration of any portion of the specification (a frequent incident in shipbuilding) invariably affords opportunity for a little extra profit.

To shipbuilders and engineers, in these competitive days, cost accounts are indeed not a luxury, but a necessity.

It is most desirable that the accounts of a shipbuilding company should be so arranged as to afford an analysis of the cost of the completed ships. It is bad business to plunge blindly into the construction of a number of ships of a single model, without making some provision beforehand for checking up the cost estimates on the ships, or without arranging matters so that the costs of the ships may be watched and compared as the work progresses. A shipbuilder is not getting proper efficiency out of his accounting department if he has to wait until a ship has been completed and delivered to find out whether he has run above or below his cost estimate; and if, on the completion of ship No. 2 he finds that it has cost more to build than ship No. 1, the knowledge will not be of any use to him unless he can put his finger on the part of the ship where the costs ran high, and then take steps to find out why they were excessive. On the other hand, if he can know, from time to time during the construction of ship No. 2, that it is costing more than it should, he can take steps to trace the cause of trouble and correct it in time to save money and avoid a loss that otherwise would not even have been known about until the ship was completed.

The process of constructing ships may be analyzed in many different ways, and most of the analyses are reasonable and justifiable, in that they are laid out to tell the man who is running the business what he wants to know. Some of them are not always logical, however; and since they have not been laid out on any uniform basis, the results are not of very much value for comparative purposes. Some conditions require a more minute analysis than others; therefore the problem has been to work out a primary cost analysis that would fit all conditions and requirements, and to supplement that by provision for a secondary analysis for use when required.

The main construction analysis submitted herewith has been worked out in consultation with experienced shipbuilders and accountants; and it is believed that it presents a thoroughly practical basis for uniform cost accounting in shipbuilding. From start to finish, the main construction analysis has been worked out strictly on a basis of structural units. It is proposed for instance, that the planking account shall be charged, not only with the cost of putting on the planking, but also with cost of caulking it and painting it, with any necessary dubbing on planking,

and with the cost of scaffolding, etc., required in planking operations. If a simple, inexpensive analysis is desired, the main construction accounts only need be used, and all labor and material charges can be posted to them in lump sums. If it is desired to make further analyses of the labor and material charges, or either of them, the secondary analyses may be used. It is recommended that, in either case a separate account be opened in a subsidiary ledger for each of the main construction accounts, and all charges thereto be posted, either in lump sum or in detail as may be required. A controlling account for the construction accounts of each ship should be carried in the general ledger. When the work on any section of the ship has been completed, the construction account on that section of the ship may be closed, thereby giving the cost of that section. When the labor and material analyses are used, postings should be in terms of quantities as well as of money, so that a recapitulation of the finished account will show the number of hours of each class of labor and the quantity of each kind of material that went into that section of the ship. Overhead expense, however analyzed, should be accumulated in the special accounts and distributed from them to the cost of the ships under construction.

Main Construction Accounts

As stated above, the main construction accounts are based on an analysis of the progress of the construction of the ship. Each account is supposed to accumulate all items of cost or expense entering into that section of the ship. The account for engines and boilers for instance, will include purchase price of engines and boilers, delivered at the ship, and the cost of installing them, including labor, supplies, spare parts and everything else necessary to complete installation of the engines and boilers in running condition. An account is provided for undistributed direct expense, but this account should only be used when it is absolutely impracticable to charge the expense elsewhere. Each account is numbered, in order to facilitate the work of distribution. Four figure numbers, running in even hundreds, have been assigned, so that the main account numbers may be combined when desired with the two figure numbers that have been given to labor and material analysis accounts.

As an illustration of the application of this numbering system, fastener labor on square frames would be charged to account 1258 and fastener labor on the cant frames to account 1358. Treenails for the square frames would be charged to account 1285 and treenails for the deck framing would go against account 1685, in the material accounts.

1000 Proportion of moulding cost. If it is proposed to build ten ships of the same model, the cost of making moulds should be distributed equally to the construction costs of these ten ships.

1100 Keel.

1200 Square frames.

1300 Stem and stern posts, cant frames, keelsons and deadwood.

1400 Steel strapping and other steel reinforcement of top, sides and deck.

1500 Ceiling.

1600 Deck framing, main deck, including all stanchions, deck clamps, knees, shelves, waterways, deck beams, hold beams, hatches, hatch coamings and covers up to top line of main deck.

1700 Engine and boiler foundations, including shaft logs and foundation for engine room auxiliaries.

1800 Foundations for winches and other deck auxiliaries.

1900 Planking, rails and bulwarks.

2000 Bulkheads.

2100 Decking. Upper and between deck.

2200 Deck superstructure, including all structures above upper deck and forecastle, boat and poop decks. Does not include plumbing or electrical lighting.

2300 Rudder.

2400 Spars, booms, rigging and lines.

2500 Tanks.

2600 Engines and boilers, condensers and cooling system, dynamos, all engine room auxiliaries and engine room piping up to engine room bulkheads.

2700 Deck auxiliaries, such as winches, capstans, steering gear, cargo gear, anchors, anchor hoists, bits, chocks, etc.

2800 Plumbing, heating, fire protection and water systems.

2900 Electrical equipment. Switchboards, wiring, lighting, fixtures, etc.

3000 Launching.
3100 Trial trip and delivery.
3200 U. S. inspection outfit. Life-saving and navigating equipment.
3300 Cabin furnishings and steward equipment.
3400 Prorated overhead. See overhead analysis.
3500 Prorated depreciation. See overhead analysis.
3600 Propeller, shaft and accessories.
3700 Undistributed direct expense. Ship and casualty insurance, wages of general foreman and other employees on a specific ship, whose time cannot be charged to any particular section thereof, and similar undistributable direct expense.

Secondary Analyses—Labor and Material

Even when secondary analyses are not used, they should be carefully studied, as they form a guide as to what constitutes direct labor and material, which is directly chargeable to the construction cost of ship, as compared with the indirect labor and material, which are to be charged to the overhead expense. It should also be noted that the same man may form both direct and indirect labor, and that material should be classed as direct or indirect according to the way it is used. If a carpenter is working on a frame of a ship, his labor is direct. If he is mending a fence around the ship yard, his labor is indirect and is chargeable to proper overhead account. If he is helping to erect a new building, his labor is chargeable to the property accounts of the company.

A blacksmith who is making a special fastening for some particular ship is doing direct labor; but if he were making bolts, to be carried in stock until they are needed for some ship or other, his labor should be charged to the inventory account in which the unfinished bolts are to be carried. Nails or lumber used in erecting scaffolding around a ship are direct material, but if the same nails or lumber were used in repairing a fence, they would be indirect material and would be chargeable to overhead.

The purpose of the secondary analyses is to provide an analysis of the cost of each section of the ship, in the same way that the purpose of the main construction analysis was to provide an analysis of the cost of the ship as a whole. If the management of the business wants to know the cost and total hours of each

class of labor that went into the square frames, or the cost and quantities of each class of material and fastening that went into the engine and boiler foundations, this information may be obtained by the use of the secondary analyses.

LABOR ANALYSIS

Foremen and helpers are to be charged, wherever possible, to the same accounts with the journeymen of the trade in which they are working. Whenever it is impossible to analyze direct labor into the various other groups provided under the main construction accounts, it may be included in group 3700, undistributed direct expense, but, needless to say, the charges to this account should be kept as small as possible. If trades other than those enumerated below are regularly employed, they may be charged to account 70, unclassified direct labor, or new account numbers may be set up to take care of them.

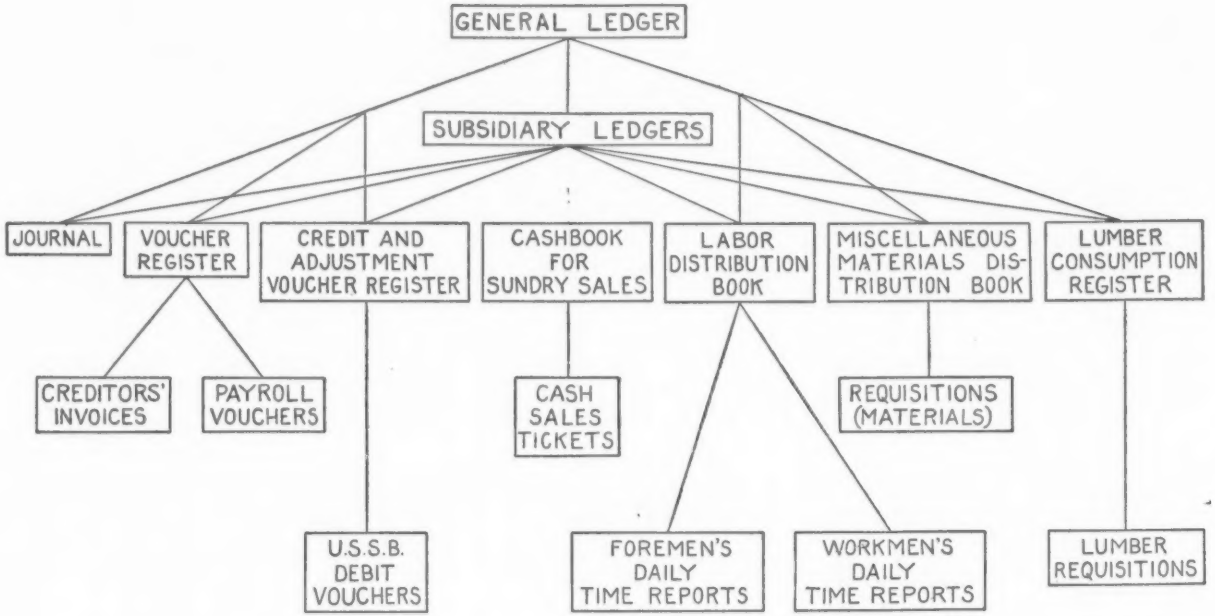
51 Blacksmith.
52 Carpenter.
53 Caulker.
54 Donkeyman.
55 Dubber.
56 Electrician.
57 Engineer.
58 Fastener.
59 Joiner.
60 Laborer.
61 Layoutman.
62 Machinist.
63 Mould loft man.
64 Painter.
65 Pipefitter.
66 Planker.
67 Rigger.
68 Sawyer.
69 Watchman (not to include general yard watchman).
70 Unclassified direct labor (general foremen, waterboys, sweepers, etc.).
71 Teams and teamsters.
72 Dockbuilders.

MATERIAL ANALYSIS

80 Timbers and planking for braces, scaffolding, etc. This account should be credited with salvage value of any material taken back into stock or transferred to another ship, but it is not recommended that any track be kept in the accounts of materials issued for use in one section of a ship and later used in some other section.
81 Fastenings for braces, scaffolding, etc. See note above.
82 Timbers and planking for ship construction.
83 Knees.
84 Flat and structural steel for strapping and braces.
85 Treenails.
86 Iron and other metal fastenings, spikes, bolts, etc.
87 Forged and cast fittings, iron and steel pipe and fittings.
88 Brass and bronze fittings.
89 Lead pipe and sheet lead.
90 Paints and varnishes.
91 Tar and wood preservatives.
92 Oakum and other caulking materials.
93 Rope and cable.
94 Mechanical equipment, inspection outfit and other purchased appurtenances.
95 Small construction supplies. Solder, cement, salt, etc.
96 Scrap lumber. This account should be credited with sale or fuel value of scrap lumber, produced in sawing out frames and other structural parts of the ship, and taken into inventory for sale or used as fuel.
97 Scrap iron, brass, miscellaneous metals, etc.

It will be a good plan to lay out the inventory controlling accounts in accordance with the above material classification, even to the extent of having a separate inventory control for each class of material. An analysis of stocks on hand and of inventory turnovers, laid out on the same basis as the grouping of the charges to construction costs, should be extremely valuable to the manager and the purchasing agent, and this additional detail of the work would not be difficult to carry out.

CHART SHOWING RELATIONSHIP BETWEEN THE BOOKS OF SUGGESTED COST ACCOUNTING SYSTEM, ALSO THE SOURCE.



Overhead Analysis

In submitting the following accounts for the analysis of overhead expenses, it is proposed that a separate ledger account be opened for each item. The primary purpose of the accounts here outlined is to provide designations and definitions of the various groups into which the overhead expense must be divided, so that the postings to the various ledger accounts for overhead expense may be worded in such a way as to provide for a recapitulation and itemized statement of overhead expense at the end of each month. An attempt has been made to provide a more or less comprehensive description of the various items chargeable to each account, but the writer does not pretend to have enumerated everything that is chargeable to each of the overhead classifications. The proper handling of the detailed distribution must depend on the judgment and intelligence of the bookkeepers and cost accountants.

1. Administrative salaries:
   Salaries of president, vice-president, secretary, treasurer, assistant secretary, assistant treasurer, purchasing agent, works manager and superintendent.

2. Office and operating salaries:
   Salaries or wage of clerks, foremen stenographers, timekeepers, watchman, and other indirect labor at ship yard, excepting labor specified to be charged to other overhead charges.

3. Outside office expense:
   Expense of any office maintained by the company outside of the office at the ship yard.

4. Plant office expense:
   Stationery, office supplies, blue prints, postage, telephone and telegraph and other office expenses.

5. Traveling and entertaining:
   All expenses in the way of fares, berths, hotel accommodation, meals, etc., of officers or employees of the company, traveling on company business, and any necessary entertaining in connection with the administration of the business or the operation of the yard. Note: No traveling or entertainment expense in connection with the possible sale of

ships to outside customers may be charged to this account, as they are proper charges to selling expense.

6. Depreciation of furniture and fixtures:
This account will be charged monthly with one-twelfth of the annual depreciation allowance provided for office furniture and fixtures.

7. Labor and material in maintenance:
All labor, materials and supplies used in maintaining in good condition the buildings, walks, fences, roadways, sewers, lighting systems and other fixed improvements on ship yard property.

8. Labor and material in repairs:
All labor, material, supplies used in repairs to machinery, air and electric tools and in keeping machinery in good condition.

9. Lubricants and waste:
All oils, greases, belt dressings, wiping waste and similar materials used in connection with the operation of all machinery in the plant.

10. Small tools (perishable):
All hand tools, drill or auger bits, saw blades, etc., will be carried in stores until actually required for use, when they will be issued to the tool room, or other proper department, and charged off to this account. This account will also be charged with any labor, material or supplies used in making or repairing small tools, and keeping them in good condition.

11. Store expense:
This account will be charged with the salaries or wages of storekeepers, tool and material clerks and other employees engaged in handling inventories of tools. It will also be charged with supplies used in stores department, transportation charges that cannot be applied directly against the commodities on which they are paid, and with any ordinary stores shortages. Any overcharges in stores will be credited to this account.

12. Automobile, team and launch expense:
Any expenses, which cannot be charged direct to stores expense or elsewhere in the accounts, in connection with the operation of company automobiles, trucks, teams or launches.

13. Heat, light, power and water:
All payments for purchased heat, light, power and water; cost of fuel and other special supplies used in power plants and wages of power plant employees, maintenance and repairs.

14. General insurance:
All insurance premiums which cannot be written off to the cost of a specific ship will be written off to this account in equal monthly instalments during the life of the policy.

15. Taxes:
This account may be charged only with taxes actually paid.

16. Ground rental:
Authorized payments for rental of property occupied by ship yard.

17. Other rentals. Tugs, derricks, etc.

18. First aid supplies and expenses, doctors' salaries, assistants, etc.

19. Dock rental:
Any periodic payments authorized to be made for use of dock facilities. If dockage charges are calculated at a flat rate per ship per day, such charges will go against the construction cost of the ship incurring them and will not be taken into overhead.

20. Exchange and discount:
This account will cover items of bank exchange and discount, incurred in the ordinary course of business, but will not include any interest on loans or discounts on purchases, for which separate accounts have been provided.

21. Extraordinary losses:
This account will be charged with losses due to fire, flood, storm, riot, vandalism, act of God, act of war, other casualties, which are not compensated by insurance or otherwise and cannot be charged direct to the construction account of a specific ship.

22. Depreciation of plant:
This account will be charged monthly with one-twelfth of the authorized annual depreciation rate, applied to the cor-

rect net book value of plant and plant equipment at the close of that month.

23. Interest paid on loans:
This account will be charged with any interest paid on loans and credited with any interest received on bank balances, or otherwise for the use of company's funds.

24. Discount received on purchases.

25. Selling expense:
This account will be charged with all compensation and expenses of employees whose sole or principal work has to do with the sale of ships to private owners, and with all expenses for advertising, except advertising for help, which may be charged to plant office expense.

Distribution of Overhead Expenses

The balance in accounts 1 to 21 shall be closed off monthly to the construction costs of all ships under construction or repair during the month, on a basis of the direct labor charged to each of such ships during the month.

The monthly charge to account 22 will be distributed to the cost of all ships that have been on the ways during the month. In calculating the proportion to be charged to each ship, the number of days that each ship has been on the ways during the month will be added up, and the total days on the ways for the month will be divided into the depreciation charge for the month. This will give depreciation charge per day on the ways, which shall then be applied to the construction cost of each ship on the basis of the number of days it has stood on the ways during the month.

The question of depreciation becomes extremely involved where loose, perishable tools are concerned, particularly in ship yards where strict supervision is more difficult than in the ordinary factory confined within walls. Electrical and air-driven tools which can be easily moved from place to place complicate the situation. They are rapidly worn away, many are broken by the carelessness of green operators and a very high rate of depreciation must be given annually to cover the loss. It is impracticable to keep individual records of these tools and an average percentage of loss must be adopted. The tools may be

divided into classes and the percentage for each determined by competent experts.

The writer does not claim to have covered the entire ground in the foregoing pages. He believes, however, that the suggestions therein contained will be found helpful and lead other cost accountants to give their views.

Each shipyard is an individual city by itself and each will require special treatment in many important and minor details.

Practical Interpolation

By Arthur S. Little.

To have in one volume sufficient matter to cover all the possible results which investors or bankers may desire . . . . . would require a volume beside which the family Bible of old would pale into insignificance . . . . . the fact, however, that a book . . . . . does not give every result sought for need not deter the user thereof from making some attempt to secure the result desired by a simple use of mathematics . . . . . Suppose that it is desired to find a price at which it will net the holder 4.05%. The nearest results in the table here given are 4% & 4.10% . . . . . add them together and divide by 2, and the result, near enough for all practical purposes, will be obtained. There will, however, be a very slight inaccuracy.

MONTGOMERY ROLLINS.*

Nearly every one, regardless of what he may or may not know of analytical geometry, fully understands the familiar device of furnishing illustrated statistics through the means of geometrical figures. The "curve of the cost of living" is a well-known example, and in a similar manner are shown stock market fluctuations, river stages, consumption of fuel, etc.

Charts of the character just referred to are, however, essentially historical in their nature, being based upon accomplished and known facts, and, no matter how great an epoch may be covered, very little reliance is to be placed upon results obtained from attempting to prolong the curve in either direction in order to read the future or unrecorded past.

But the case is entirely different when we come to illustrate numerical values, either abstract or concrete and involving time, space or matter, provided that the values depicted progress in accordance with some fixed inflexible law, however complex it may be, for in such instances the systematic law and order under which the numerical quantities are mutually interdependent is faithfully reflected in the geometrical design, and the result is invariably either a straight or a curved line (always the latter unless the "law" be extremely simple) which requires nothing more than plain eyesight and common sense to determine that it is "symmetrical," thus suggesting at once that it is at least theoretically possible, by prolonging the curve under its own plan of curvature, to obtain quickly and accurately, through the aid of draftmen's tools alone, an indefinite number of additional functions in the same category as the limited number originally at hand.

*Annals of the American Academy, September, 1907, p. 52.

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The brief chapter on interpolation in Sprague's *Accountancy of Investment,* while excellent as far as it goes, is by no means as complete as it might and should be, and the student is left almost entirely in the dark as to how to proceed in attempting to work with series of a different type from that employed in the single example given.

The orthodox definition of a series is: "A number of terms; each of which is derived from one or more of the preceding terms according to some determinate law."* Practically all the mathematical tables employed by accountants, bond dealers, astronomers, engineers, etc., are a perfect type of series as just defined, and notwithstanding the diversified nature of such tables and the various more or less complex laws governing their construction, if they be drawn to scale on profile paper it will be found that only three geometrical forms are produced, viz:

(a) (b) a straight line,

(c) (d) a concave curved line,

(e) (f) a convex curved line,

depicting respectively series whose successive terms possess the following mathematical properties:

(a) (b) Increasing/decreasing at a uniform rate.

Examples: A simple interest table.

Bond values at different equi-distant coupon rates.

(c) An increasing increase.

Examples: Growth of a single sum at compound interest.

Amount of an annuity.

Natural tangents and secants.

(d) Taken in opposite direction.

(d) A decreasing decrease.

Examples: (c) Taken in opposite direction.

Bond values (below par) by time units.

Bond values by income rates.

Reciprocals of natural numbers.

Present worths of a single sum.

(e) A decreasing increase.

*Joseph Ray.

Examples: Bond values (above par) by time units.

Present worth of an annuity.

Logarithms.

Natural sines.

(f) Taken in opposite direction.
(f) An increasing decrease.

Examples: (e) Taken in opposite direction.

(I am unable to think of any tables in common use that come under this head, although they doubtless exist in connection with certain subjects—e. g., astronomy and ordnance.)

If these six types be "differenced out" the following laws will be found to prevail:

(a) (b) No second difference.
(c) First difference negative, and thereafter signs alternately plus and minus.
(d) Differences all positive.
(e) Differences all negative.
(f) First difference positive, and thereafter alternately minus and plus.

Most of the ordinary mathematical tables are of the types (c), (d) and (e), and if the series be extended indefinitely it becomes evident, upon investigation, that the curve thus prolonged is steadily lengthening and approaching the limit of a straight line, to be attained at infinity. This ultimate straight line is:

(c) Perpendicular to the base,
(d) Coincident with the base,
(e) Parallel to the base.

An interesting example of the latter is afforded by a chain of values for, say, a 5% bond to yield 4%. At 50 years the value of the ordinate is 121.55; at 100 years 124.52 and will be 124.99 within a reasonable time, but eternity is required to bring it up to the limit of 125.

There are some types of series, however, which by their nature have a definite beginning and ending and cannot be extended indefinitely. For example, the natural tangents of the quadrant start with 0; reach 1 at 45°; 573 at 89°.9 and through the remaining 6 minutes of the arc increase at a frightful rate from the aforesaid 573 to infinity!

The natural sines furnish an example of a curve of the (e) type which cannot be prolonged indefinitely. Another good instance is afforded by the second difference factors in the accompanying table. In view of the behavior of the curve in the case of compound interest tables, reciprocals, logarithms, etc., it would scarcely seem possible that a curve which reaches a peak and then retrogrades and reproduces itself in a contrary direction could be governed by any self-contained "law;" nevertheless such is the case. For instance, if we take the natural sines:

70°	939,693
75°	965,926
80°	984,808
85°	996,195
90°	1,000,000

and attempt to obtain the 6th term (95°) by extrapolation, we obtain 996,195, which is correct. Mathematical notice or warning that the curve is about to pass a peak is afforded by the second difference becoming greater than the first difference on which it bears, and the passing of the peak is indicated by a change of signs in the first difference.

If bond values for 3%, 4%, 5%, 6% and 7% bonds running, say, 20 years and yielding 4% be calculated and drawn to scale we will obtain a curve of the (a)-(b) type as shown in figure I. If,

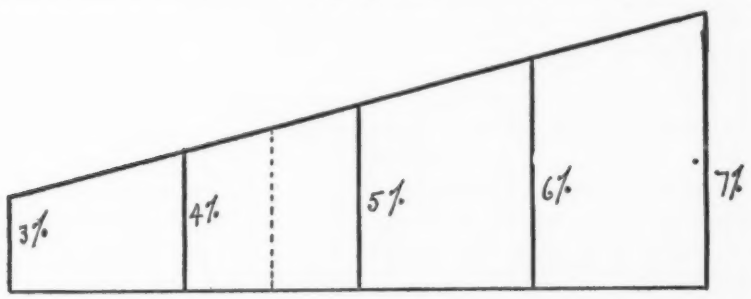

FIGURE I

now, it is desired to obtain (without independent calculation) the corresponding value for 4½s, it is evident that no error whatever will ensue from "adding together the 4% and 5% values and dividing by 2" as it is merely an application of the geometrical principle that the median of a trapezoid is equal to half the sum of the bases. But if we attempt, in a similar manner, to insert a

13½ years' value for a 4% bond to yield 7% between given values for 1 year and 26 years we obtain 80.73 instead of the correct value of 74.07. If the basis be 3% we obtain 109.47 instead of the correct value of 111.03. These respective errors (in excess on prices below par and in defect on prices above par) are indicated by HS in figures II and III and represent, in principle, the unsoundness of the common practice of bond dealers whereby serial bonds are negotiated at one price based upon the "average life."

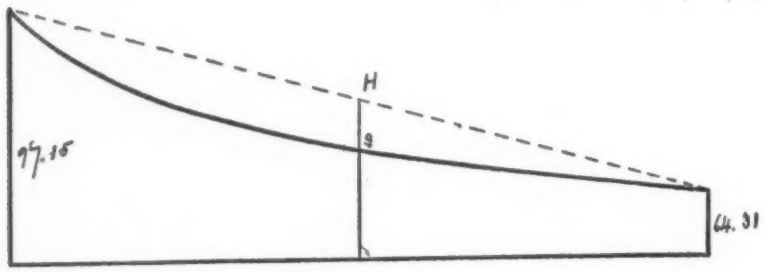

FIGURE II

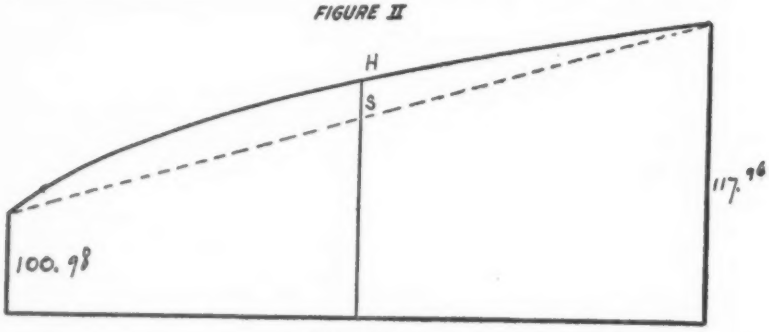

FIGURE III

Notwithstanding that there are, as we have noted, at least seven types of series to be found in ordinary mathematical tables, the actual process of interpolation in practical every day work is very much simpler than any one would ever suppose from reading anything on the subject in existence which I have yet seen in college algebras and other mathematical treatises.

The general method or rule, applicable to all cases, is as follows:

Set down in a vertical column a sufficient number of equi-distant terms, commencing with the pair between which lies the function sought.

Subtract each term in the column from the term immediately above it until an adjacent column is built up containing one less item.

In a similar manner subtract each item in column II from the item immediately above, building up a third column containing two less items than the first. Continue in this manner until a column is obtained whose items are all equal, or practically so.* Then take the first term in the original column and subtract therefrom such portions of the first item in the 2nd, 3rd, 4th, etc. columns as are called for by the accompanying table for the interval desired.

This is all there is to it, except of course that "subtracting" is to be done throughout in an algebraic sense, and due care must be exercised with regard to signs.

EXAMPLE I.

Find a 4.136% basis for 27½ year 5s.

4.10%	1,147,609.83				
4.15%	1,138,627.44	8,982,39			
4.20%	1,129,743.17	8,884,27	98,12		
4.25%	1,120,955.82	8,787,35	96,92	1,20	
4.30%	1,112,264.20	8,691,62	95,73	1,19	

8,982,39 x .72	6,467.32,1†
98.12 x .1008	9,89,0
1.20 x .043	5,2
Total correction	6,477,26,3
	1,147,609.83
	6,477.26
	1,141,132.57

For verification purposes there are two methods that can generally be conveniently employed, either of which is much better than the very poor plan of going over one's own figures.

First method: repeat the operation, taking a different interval in the 1st column.

*"The extent to which the last column of differences may be allowed to waver will be learned by experience."—*Sprague.*

†To obtain the full degree of accuracy in final figures, work should be carried to one spare column in this manner.

4.10%	1,147,609.83				
4.20%	1,129,743.17	17,866.66			
4.30%	1,112,264.20	17,478.97	387.69		
4.40%	1,095,163.44	17,100.76	378.21	9.48	
4.50%	1,078,431.64	16,731.80	368.96	9.25	.23
4.60%	1,062,059.79	16,371.85	359.95	9.01	.24

17,866.66 x .36	6,431.99,8	
387.69 x .1152	44.66,2	
9.48 x .063	.59,7	
.23 x .042	1,0	1,147,609.83
		6,477.27
	6,477.26,7	
		1,141,132.56

Note that this time we obtain one more order of differences than at first. To generalize: the closer the interval between the equi-distant terms in the 1st column, the simpler the calculation.

Second method: reverse the order of the terms.

4.15%	1,138,627.44				
4.10%	1,147,609.83	—8,982.39			
4.05%	1,156,691.59	—9,081.76	99.37		
4.00%	1,165,873.94	—9,182.35	100.59	—1.22	
3.95%	1,175,158.15	—9,284.21	101.86	—1.27	.05

—8,982.39 x .28	—2,515.06,9	
99.37 x .1008	10.01,6	
—1.22 x .0578	—7,1	
	—2,505.12,4	
		1,138,627.44
		—2,505.12
		1,141,132.56

Example II

Find the logarithm of 1.0196.

10195	008,587,230,114,159				
10200	008,600,171,761,918	—212,941,647,759			
10205	008,813,009,052,089	—212,837,290,171	—104,357,588		
10210	009,025,742,086,910	—212,733,034,821	—104,255,350	—102,238	
10215	009,238,370,968,466	—212,628,881,556	—104,153,265	—102,085	—153
10220	009,450,895,798,694	—212,524,830,228	—104,051,328	—101,937	—148

—212,941,647,759 x .2	—42,588,329,551,8
—104,357,588 x .08	—8,348,607,0
—102,238 x .048	—4,907,4
—153 x .0336	—5,1
	42,596,683,071,3

008,387,230,114,159
—42,596,683,071

008,429,826,797,230

The rule heretofore given that the various corrections are always to be subtracted from the topmost term in the first column is still true in an algebraic sense; nevertheless it is absurdly inconvenient to attempt to make a literal and formal compliance in all cases, to say nothing of the danger of getting off the track, and in practice the rule becomes (as the reader has no doubt already observed)

Positive difference corrections are to be subtracted.

Negative difference corrections are to be added.

Another feature brought out in the following example is this, that the algebraic sign of differences is not determined alone by whether an item is subtracted from its neighbor immediately above or below itself. To overcome this inconvenience of subtracting upside down and to guard against the danger of confusing the signs, adding when we should subtract, etc., I have devised the following plan, illustrated in the two following examples:

Example III

Find logarithm of 323.

320	505,149,98					
330	518,513,94	986,636,04				
340	531,478,92	987,035,02	99,601,02			
350	544,068,04	987,410,88	99,624,14	9,976,88		
360	556,302,50	987,765,54	99,645,34	9,978,80	98,08	
370	568,201,72	988,100,78	99,664,76	9,980,58	98,22	9,86
380	579,783,60	988,418,12	99,682,66	9,982,10	98,48	9,74

13,363,96 x .3	4,009,18,8	
398,98 x .105	41,89,3	
23,12 x .0595	1,37,6	505,149,98
1,92 x .04016	7,7	4,052,54
,14 x .0297	,4	
	4,052,53,8	509,202,52

EXAMPLE IV

Find a 4.45% basis for 4s, 97½ years to run.

100	900,116.42						
95	900,421.66	99,694.76					
90	900,802.03	99,619.63	75.13				
85	901,276.02	99,526.01	93.62	981.51			
80	901,866.70	99,409.32	116.69	976.93	4.58		
75	902,602.76	99,263.94	145.38	971.31	5.62	98.96	
70	903,520.02	99,082.74	181.20	964.18	7.13	98.49	.47

—305.24 x .5	—152.62,0	
75.13 x .125	9.39,1	
—18.49 x .0625	—1.15,6	900,116,42
4.58 x .03906	17,9	144,22
—1.04 x .0273	—2,8	————
.47 x .0205	,9	900,260,64
	————	
	144.22,5	

By this method, regardless of the class of the curve and the relative numerical value of the terms and their orders of differences, we always subtract from the item immediately above in the manner just shown, despite what schoolboys might think. In performing this impossible subtraction it is well (although not necessary) to work with red ink, but in any case at least one prefixing nine should be written into the work. The differences in such columns are of course negative, and the arithmetical complement is to be taken for use with the correction factors. Such arithmetical complements are easily read off by inspection—subtracting each digit from 9 until the last on the right is reached, which is subtracted from 10. As shown by the last two examples, this plan works equally well whether the differences are all negative or are alternatively positive and negative, or vice versa. To put it another way, in all cases:

Results of normal ordinary subtraction are negative.
Results of impossible subtraction are negative.

When there are but a few orders of differences, the work can often be performed with advantage in one column.

Example: find a 4⅛ basis for 3½s, 6 years to run.

	4.10%	968,371.18
	4.15%	965,787.92
	4.20%	963,212.61
	4.25%	960,645.21
		2,583.26
		2,575.31
		2,567.40
		7.95
		7.91
½ of 1st difference.....		1,291.63
⅛ of 2nd difference.....		.99
Total correction to be subtracted from item at top of column		1,292.62
		967,078.56

While the process of interpolation as explained is perfectly sound and can, in theory, be carried to indefinite lengths, nevertheless its practical usefulness is decidedly limited, and as a rule it is not worth while—even if attendant conditions do not make it impossible—to attempt to interpolate unless the interval in the original material is small. For instance, it is utterly impossible to obtain the present worth of an annuity @ 5½% for 30 periods from the tables contained in the *Accountancy of Investment.*

* * * * * * * * *

The following difference factors have been computed and proven with the greatest of care and are believed to be free from errors of any kind. The fourth and fifth columns are, of course, carried to many more decimal places than will ordinarily be required. This was done for the benefit of those who may wish to compute factors for further orders of differences. In the first table for 100ths the fifth column is the only one containing rounded figures, the first four columns being perfect.

Each of these columns of factors is a series, and factors for any desired interval not given herewith may be interpolated, should that method be preferred to direct calculation.

TABLE I

(Hundredths)

1st	2nd	3rd	4th	5th
.01	.004,95	.003,283,5	.002,454,416,25	.001,958,624
.02	.009,8	.006,468	.004,818,66	.003,835,653
.03	.014,55	.009,554,5	.007,094,216,25	.005,632,808
.04	.019,2	.012,544	.009,282,56	.007,351,788
.05	.023,75	.015,437,5	.011,385,156,25	.008,994,273
.06	.028,2	.018,236	.013,403,46	.010,561,926
.07	.032,55	.020,940,5	.015,338,916,25	.012,056,388
.08	.036,8	.023,552,	.017,192,96	.013,479,281
.09	.040,95	.026,071,5	.018,967,016,25	.014,832,207
.10	.045	.028,5	.020,662,5	.016,116,750
.11	.048,95	.030,838,5	.022,280,816,25	.017,334,475
.12	.052,8	.033,088	.023,823,36	.018,486,927
.13	.056,55	.035,249,5	.025,291,516,25	.019,575,634
.14	.060,2	.037,324	.026,686,66	.020,602,102
.15	.063,75	.039,312,5	.028,010,156,25	.021,567,820
.16	.067,2	.041,216	.029,263,36	.022,474,260
.17	.070,55	.043,035,5	.030,447,616,25	.023,322,874
18	.073,8	.044,772	.031,564,26	.024,115,095
.19	.076,95	.046,426,5	.032,614,616,25	.024,852,338
.20	.08	.048	.033,6	.025,536,000
.21	.082,95	.049,493,5	.034,521,716,25	.026,167,461
.22	.085,8	.050,908	.035,381,06	.026,748,081
.23	.088,55	.052,244,5	.036,179,316,25	.027,279,204
.24	.091,2	.053,504	.036,917,76	.027,762,156
.25	.093,75	.054,687,5	.037,597,656,25	.028,198,242
.26	.096,2	.055,796,	.038,220,26	.028,588,754
.27	.098,55	.056,830,5	.038,786,816,25	.028,934,965
.28	.100,8	.057,792,	.039,298,56	.029,238,129
.29	.102,95	.058,681,5	.039,756,716,25	.029,499,483
.30	.105	.059,5	.040,162,5	.029,720,250
.31	.106,95	.060,248,5	.040,517,116,25	.029,901,632
.32	.108,8	.060,928	.040,821,76	.030,044,815
.33	.110,55	.061,539,5	.041,077,616,25	.030,150,970
.34	.112,2	.062,084	.041,285,86	.030,221,250
.35	.113,75	.062,562,5	.041,447,656,25	.030,256,789
.36	.115,2	.062,976	.041,564,16	.030,258,708
.37	.116,55	.063,325,5	.041,636,516,25	.030,228,111
.38	.117.8	.063,612	.041,665,86	.030,166,083
.39	.118,95	.063,836,5	.041,653,316,25	.030,073,694
.40	.12	.064	.041,6	.029,952,000
.41	.120,95	.064,103,5	.041,507,016,25	.029,802,038
.42	.121,8	.064,148	.041,375,46	.029,624,829
.43	.122,55	.064,134,5	.041,206,416,25	.029,421,381
.44	.123,2	.064,064	.041,000,96	.029,192,684

TABLE I—continued

(Hundredths)

1st	2nd	3rd	4th	5th
.45	.123,75	.063,937,5	.040,760,156,25	.028,939,711
.46	.124,2	.063,756	.040,485,06	.028,663,422
.47	.124,55	.063,520,5	.040,176,716,25	.028,364,762
.48	.124,8	.063,232	.039,836,16	.028,044,657
.49	.124,95	.062,891,5	.039,464,416,25	.027,704,020
.50	.125	.062,5	.039,062,5	.027,343,750
.51	.124,95	.062,058,5	.038,631,416,25	.026,964,729
.52	.124,8	.061,568	.038,172,16	.026,567,823
.53	.124,55	.061,029,5	.037,685,716,25	.026,153,887
.54	.124,2	.060,444	.037,173,06	.025,723,758
.55	.123,75	.059,812,5	.036,635,156,25	.025,278,258
.56	.123,2	.059,136,	.036,072,96	.024,818,196
.57	.122,55	.058,415,5	.035,487,416,25	.024,344,368
.58	.121,8	.057,652	.034,879,46	.023,857,551
.59	.120,95	.056,846,5	.034,250,016,25	.023,358,511
.60	.12	.056	.033,6	.022,848,000
.61	.118,95	.055,113,5	.032,930,316,25	.022,326,754
.62	.117,8	.054,188	.032,241,86	.021,795,497
.63	.116,55	.053,224,5	.031,535,516,25	.021,254,938
.64	.115,2	.052,224	.030,812,16	.020,705,772
.65	.113,75	.051,187,5	.030,072,656,25	.020,148,680
.66	.112,2	.050,116	.029,317,86	.019,584,330
.67	.110,55	.049,010,5	.028,548,616,25	.019,013,378
.68	.108,8	.047,872	.027,765,76	.018,436,465
.69	.106,95	.046,701,5	.026,970,116,25	.017,854,217
.70	.105	.045,5	.026,162,5	.017,267,250
.71	.102,95	.044,268,5	.025,343,716,25	.016,676,165
.72	.100.8	.043,008	.024,514,56	.016,081,551
.73	.098,55	.041,719,5	.023,675,816,25	.015,483,984
.74	.096,2	.040,404	.022,828,26	.014,884,026
.75	.093,75	.039,062,5	.021,972,656,25	.014,282,227
.76	.091,2	.037,696	.021,109,76	.013,679,124
.77	.088,55	.036,305,5	.020,240,316,25	.013,075,244
.78	.085,8	.034,892	.019,365,06	.012,471,099
.79	.082,95	.033,456,5	.018,484,716,25	.011,867,188
.80	.08	.032	.017,6	.011,264,000
.81	.076,95	.030,523,5	.016,711,616,25	.010,662,011
.82	.073,8	.029,028	.015,820,26	.010,061,685
.83	.070,55	.027,514,5	.014,926,616,25	.009,463,475
.84	.067,2	.025,984	.014,031,36	.008,867,820
.85	.063,75	.024,437,5	.013,135,156,25	.008,275,148
.86	.060,2	.022,876	.012,238,66	.007,685,878
.87	.056,55	.021,300,5	.011,342,516,25	.007,100,415
.88	.058,8	.019,712	.010,447,36	.006,519,153

TABLE I—continued

(Hundredths)

1st	2nd	3rd	4th	5th
.89	.048,95	.018,111,5	.009,553,816,25	.005,942,474
.90	.045	.016,5	.008,662,5	.005,370,750
.91	.040,95	.014,878,5	.007,774,016,25	.004,804,342
.92	.036,8	.013,248	.006,888,96	.004,243,599
.93	.032,55	.011,609,5	.006,007,916,25	.003,688,861
.94	.028,2	.009,964	.005,131,46	.003,140,454
.95	.023,75	.008,312,5	.004,260,156,25	.002,598,695
.96	.019,2	.006,656	.003,394,56	.002,063,892
.97	.014,55	.004,995,5	.002,535,216,25	.001,536,341
.98	.009,8	.003,332	.001,682,66	.001,016,327
.99	.004,95	.001,666,5	.000,837,416,25	.000,504,125

TABLE II

(Twelfths)

1st	2nd	3rd	4th	5th
.083,333,...	.038,194,...	.024,402,006	.017,793,130,	.013,938
.166,666,...	.069,444,...	.042,438,272	.030,060,442	.023,046
.25	.093,75	.054,687,5	.037,597,656	.028,198
.333,333,...	.111,111,...	.061,728,395	.041,152,263	.030,178
.416,666,...	.121,527,...	.064,139,660	.041,423,531	.029,687
.5	.125	.062,5	.039,062,5	.027,344
.583,333,...	.121,527,...	.057,388,117	.034,671,988	.023,693
.666,666,...	.111,111,...	.049,382,716	.028,806,584	.019,204
.75	.093,75	.039,062,5	.021,972,656	.014,282
.833,333,...	.069,444,...	.027,006,173	.014,628,344	.009,265
.916,666,...	.038,194,...	.013,792,438	.007,183,562	.004,430

TABLE III

(Sixteenths)

1st	2nd	3rd	4th	5th
.062,5	.029,296,875	.018,920,878	.013,895,035	.010,942
.125	.054,687,5	.034,179,687,5	.024,566,650	.019,039
.187,5	.076,171,875	.046,020,508	.032,358,170	.024,673
.25	.093,75	.054,687,5	.037,597,656	.028,198
.312,5	.107,421,875	.060,424,805	.040,597,916	.029,941
.375	.117,187,5	.063,476,562,5	.041,656,494	.030,201
.437,5	.123,046,875	.064,086,914	.041,055,679	.029,252
.5	.125	.062,5	.039,062,500	.027,344
.562,5	.123,046,875	.058,959,961	.035,928,726	.024,701
.625	.117,187,5	.053,710,937,5	.031,890,869	.021,526
.687,5	.107,421,875	.046,997,070	.027,170,181	.018,000
.75	.093,75	.039,062,5	.021,972,656	.014,282
.812,5	.076,171,875	.030,151,367	.016,489,029	.010,512
.875	.054,687,5	.020,507,812,5	.010,894,775	.006,809
.937,5	.029,296,875	.010,375,977	.005,350,113	.003,277

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EDITORIAL

Safeguarding Investment

The newspapers of December 26th contained an announcement from Washington to the effect that the capital issues committee would suspend operations December 31, 1918. It is understood that the committee is not to be dissolved, but is to become inactive.

Charles S. Hamlin, chairman of the committee, made the following statement:

In view of the rapid changes that have taken place since the signing of the armistice, the capital issues committee has voted to suspend its activities on December 31.

The committee will not be dissolved, but will remain inactive, unless it is found that the sale of new securities competes unduly with government financing or for other reasons it may become desirable for the committee to resume its work pending its dissolution by the president or by operation of law.

Although the war emergency which gave rise to the creation of the committee has passed, it is nevertheless imperative that capital should be saved and not wasted, and the removal of the restraining influence exerted by the committee during its existence should not be construed as approval of the financing of unnecessary public projects or private enterprises of doubtful merit. On the contrary, the financial needs of the government and the large capital requirements of the railroads and for the readjustment of American industries to a peace basis compel strict economy in the use of new capital.

While legitimate business may safely be left to work out its own problems, the capital issues committee feels that it would be unfaithful to its responsibilities if it failed to warn the public respecting the enormous losses sustained by the nation through the sale of worthless and fraudulent securities. In the opinion of the committee, the sale of such securities should be restrained in times of peace as well as in war, and it is strongly urged that congress establish adequate machinery to put a stop to this traffic.

The extent of the menace, due to the issue of such securities, to the holders of government bonds is revealed by the fact that schools are being established in some parts of the country to drill salesmen in the art of persuading investors to subscribe for unmeritorious or worthless securities. This can only be prevented by legislation vesting in some duly constituted public agency full power to restrain the offering of fraudulent or worthless securities.

The capital issues committee warns the public and earnestly directs the attention of congress to the problem. It is the intention of the committee to make a supplementary report to congress recommending a law to prevent these existing abuses and such impositions upon the investing public.

The committee will maintain its offices in Washington until further notice.

The secretary of the treasury also has issued a statement relative to the suspension of activities by the capital issues committee which is of much importance. The text of the statement follows:

The decision of the capital issues committee to suspend its activities on December 31, should not be interpreted by the business public as a warrant for any expenditure of capital for needless or unwise purposes, whether public or private in their nature. Should it become apparent that voluntary restraints are not being exercised so as to prevent the misuse of capital, I shall request the committee to resume its control.

My chief misgiving in accepting the action of the committee arises out of the need the committee has frequently expressed, and the importance of which has become increasingly obvious, of protecting the public investor against the flood of worthless or doubtful securities which threaten the market when the restrictions are removed; and present conditions emphasize the importance of obtaining emergency legislation as speedily as possible, so as to be able to cope effectively with this evil. The government not only should protect itself as to future bond issues, but as well owes a duty to the millions of Liberty bond buyers, to restrain reckless fraudulent promoters, particularly at this time.

I intend to ask congress immediately for legislation that will check the traffic in worthless securities, while imposing no undue restrictions upon the financing of legitimate business, and shall urge that it be made effective before the close of the present session. Meantime, it may become necessary, before such legislation is passed, to reassemble the committee for the purpose of resuming its functions.

Side by side with the foregoing statement in one of the New York papers appeared an offering of $10,598,000 St. Louis-San Francisco prior lien mortgage 6% gold bonds. The bonds are offered by two well-known New York houses.

In the advertisement appears a letter of the president of the company which sets forth the nature of collateral of the bonds, purpose of the flotation, earnings for 1917 and 1916 and other information. Then follows the statement that the issuance of the bonds has been approved by the United States Railroad Administration, and in small type at the bottom of the advertisement appears the following:

The above statements are not guaranteed, but are based upon information and advice which we believe to be accurate and reliable, and upon which we have acted in purchasing these securities.

The advertisement is a fair sample of the better class of security advertising and there is no reason to doubt the truth of the representations which it contains.

Other advertisements are beginning to appear which contain such statements as "From a letter of the general manager we quote as follows," and "The legal features of the issue have been approved by Messrs. (giving name of a legal firm or firms)."

We believe that there is a vital relationship between the public interests, the announced desuetude of the capital issues committee and the offering of securities.

The United States has become for the first time in its career a creditor nation. The country expects to enter upon an era of wonderful prosperity. It is certain that there will be efforts to sell all manner of stocks and bonds, some of which could not by the utmost stretch of imagination be termed securities, and the public, always gullible, will almost certainly buy the things which are offered if the promise of return be made sufficiently attractive.

It has been stated in congress that one or more bills will shortly be introduced providing for "blue sky" legislation somewhat in the manner of the blue sky laws existing in some of our states.

The statements of Mr. Glass and Mr. Hamlin and the promise of introducing "blue sky" bills indicate that the official mind is awake to the danger of indiscriminate flotation of securities or insecurities. But even in the days when wild cats were not unknown in Wall Street there was always a minority of opinion opposed to indiscriminate flotation of stock and bond issues.

The public of those days was very much like the public of the days that are to come, and when money is abundant there will surely be capital available to any one who can present a plausible promise of high return on capital invested.

It seems to an accountant an extraordinary thing that the one most effective and obvious preventive of the sale of worthless stocks and bonds has escaped official notice.

We believe that the reputable stock exchanges of the country will do their utmost to discourage investment in shady undertakings, but it must be remembered that there are security marts which are not likely to question over-searchingly the intrinsic value of securities offered by their members; and there is a great body of small investors who are not able to differentiate between truth and fiction and good and bad when it comes to financial affairs.

Here lies the opportunity for the accounting profession to justify its own opinion of its value.

If congress and the various government departments concerned were to insist that no security should be offered to the public unsupported by the testimony of an impartial and qualified investigator the possibility of successful flotation of invalid or doubtful stock and bond issues would be reduced to a minimum.

For example, if advertisements contained statements of the financial condition of the companies made and signed by reputable accountants the public could feel a fair degree of confidence that things were as they were represented to be.

Even the most conscientious company officer is likely to overestimate the intrinsic worth of the company with which he is connected.

My dog is ever better than thy dog and sometimes my opinion is based more upon intimacy and preference than upon true knowledge of canine merits.

It is altogether unwise to rely solely upon opinions expressed by companies issuing securities, and we believe that company officers of the right kind would vastly prefer that the statements of condition should be prepared and presented by impartial investigators than by persons on the payroll of the companies concerned.

Yet it is a remarkable fact that an offering of securities supported by an accountant's statement is a rare exception.

The accounting profession should stand as the intermediary between the investor and the investment. The accountant should be the fiduciary of public trust with an obligation to speak the truth and nothing but the truth.

The capital issues committee during its active supervision of new issues has been a protection against fraudulent or worthless security offerings. During the war there has been small temptation and little opportunity to issue securities other than those of the government. The tremendous volume of investments in the Liberty loans has absorbed practically all the available investment capital, but there will be only one or two more colossal issues of government securities and the amount of capital available for investment will begin to accumulate rapidly.

We do not believe that the capital issues committee would be the best means of preventing deception of the investing public, but it seems quite clear to us that there should be some govern-

mental requirement relative to the investigation of the financial condition of companies seeking to sell securities. The English companies' act is far and away superior to any federal or state legislation in this country governing the issuance of securities, and with that act as a model it should not be difficult for congress to prepare a measure for the safeguarding of the people's capital.

We commend to our legislators the consideration of the utilization of the public accounting profession for that purpose in which its activities may be most fitly and valuably employed.

Income Tax Department

EDITED BY JOHN B. NIVEN, C.P.A.

The most hopeful forecast that has been received regarding the passage of the revenue bill is that it may be reported by the conferees and passed by both houses ready for the signature of the president by February 1, 1919.

Supreme court decisions have been quoted in which the right of congress to impose a tax measured by the income of the previous year is affirmed, thus setting at rest the doubts that have been circulated as to the constitutionality of an income tax law retroactive in its effect and even if enacted in a year subsequent to that to which it relates.

The only new ruling available, bearing on income taxes, is T. D. 2773. It relates to the 1909 corporation excise tax law, but is of interest because of its distinction, as made by the court, between maintenance and depreciation. Maintenance, "the upkeep or preserving of the condition of the property . . . . . includes the cost of ordinary repairs necessary and proper from time to time for that purpose." But "depreciation is not to be confused with ordinary repairs," and is "intended to cover . . . . . the estimated lessening in value of the original property, if any, due to wear and tear, decay or gradual decline from natural causes, inadequacy, obsolescence, etc., which at some time in the future will require the abandonment or replacement of the property in spite of ordinary current repairs." Hence repairs were deductible as an "expense," and depreciation also, because specifically mentioned in the act.

The 1917 act contains substantially the same wording in dealing with the same subject, which is further explained in article 159 of regulations 33. Depreciation is there described as the loss "from wear and tear due to the use to which the property is put and which loss has not been made good through expenditures for renewals, replacements and repairs deducted under the heading of expense for maintenance and operation."

TREASURY RULING

(T. D. 2773, November 8, 1918.)

Special excise tax on corporations—Decision of court.

A steamship company is entitled to deduct from gross income in annual tax returns required by section 38 of the act of August 5, 1909 (36 Stat., 112), amounts paid out for ordinary and necessary repairs in the maintenance and operation of its business and property and in addition a reasonable allowance for depreciation of property, if any.

IN THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DIVISION OF THE NORTHERN DISTRICT OF CALIFORNIA, SECOND DIVISION. No. 15782.

The San Francisco & Portland Steamship Co., plaintiff, v. *John J. Scott, collector of internal revenue, etc., and August F. Muenter, defendants.*

[Memorandum by BEAN, district judge (sitting by special assignment).]

This action is to recover certain amounts paid by the plaintiff under protest as excise taxes levied under the act of congress of August 5, 1909, section 38 (36 Stat. L., 112) for the years 1910 and 1912.

In its returns plaintiff included in its deductions for ordinary and necessary expenses paid out for the maintenance and operation of its business and property, for the year 1910, $17,088.77 and for the year 1912 $25,371.40, being amounts expended in each of such years for making "ordinary and necessary" repairs to the deck department, engine department, and commissary department of its steamers, and also $59,642.11 for 1910 and $79,350.96 for 1912 for depreciation of such steamers, being 5 per cent. of the book value thereof.

It is admitted that the deductions for depreciation are reasonable and should be allowed, but the commissioner ruled that the cost of making *ordinary and necessary* repairs was not a proper item to be included in the operation and maintenance expenses but was covered by the deductions for depreciation and required plaintiff to pay taxes thereon, which it did under protest and hence this suit.

The question thus raised does not seem to have been directly decided in any reported case to which my attention has been called or which I have been able to find, although the cost of repairs and upkeep was assumed in *Grand Rapids & Indiana Railway* v. *Doyle* (245 Fed., 792) to be an item properly included in operating and maintenance expense.

Under the law the tax is to be laid on net income and such net income is to be ascertained by deducting from the gross income (1) all the ordinary and necessary expenses actually paid within the year out of income in the "maintenance and operation" of the business and property; (2) losses actually suffered not covered by insurance, including a reasonable allowance for depreciation, if any. * * *

It will thus be seen that the deductions allowed are to include not only ordinary and necessary amounts actually paid out in the operations of the property but also the amounts paid out in the maintenance thereof, and in addition a reasonable sum for depreciation, if any. Now, the operation of a business or property includes payment for labor and materials which go into the actual operation thereof, while maintenance means the upkeep or preserving the condition of the property to be operated and therefore, in my judgment, includes the cost of ordinary repairs necessary and proper from time to time for that purpose. Depreciation as used in the statute is not to be confused with ordinary repairs. It is intended to cover the estimated lessening in value of the original property, if any, due to wear and tear, decay, or gradual decline from natural causes, inadequacy, obsolescence, etc., which at some time in the future will require the abandonment or replacement of the property in spite of ordinary current repairs. It follows that the tax complained of was illegally exacted and the plaintiff is entitled to judgment for its recovery. Findings may be prepared accordingly.

Students' Department

EDITED BY SEYMOUR WALTON, C.P.A.

(ASSISTED BY H. A. FINNEY, C.P.A.)

INSTITUTE EXAMINATION, NOVEMBER, 1918

In regard to the following attempt to present the correct solutions to the questions asked in the examination held by the American Institute of Accountants in November, 1918, the reader is cautioned against accepting the solutions as official. They have not been seen by the examiners—still less endorsed by them.

AUDITING

Question 1:

How would you proceed to audit the books and accounts of the treasurer of a local Red Cross chapter? What evidence would you require as to the propriety of disbursements, and how would you ascertain that all receipts were duly recorded?

Answer:

In the only local chapter with which I am at all acquainted there is no auditor or comptroller. There is a director or supervisor for each bureau or section of the work, a business manager and a chairman of the finance committee. In auditing the disbursements I should require the production of requisitions by the directors or supervisors of the various sections, approved by the business manager or his assistant. Proof of the receipt of goods purchased should be furnished by the records of the various receiving departments.

The proof that all receipts had been duly recorded would depend largely upon what kind of internal check was employed. If money for subscriptions, memberships, etc., was received by one person and the receipt given by another, it would be necessary only to test enough of the work to satisfy oneself that everything was regular. If the same person both took in the money and issued the receipt there would be no way to vouch for the accuracy of the records. Stubs of receipt books or carbon copies of receipts are no proof at all. It is manifest that a stub need not correspond with a receipt that is given up and is not available for comparison. A carbon may not be a true copy of the original. It is easy to insert above the carbon a sheet of paper thick enough to prevent any record by the carbon when the receipt is written for one amount, and then to write on ordinary paper a receipt for a smaller sum which will be copied by the carbon. In an office this would be hazardous as there is great danger of its being observed by others of the office force, but it could be done by outside solicitors.

In a very small chapter one person is likely to be in charge of every department. No actual audit is possible in such a case, and reliance must be placed on the character of the person in charge, who is always a lady

of standing in the community. The citizens of a small city usually know fairly well what a person in a prominent position is doing, and virtually constitute an auditing committee in themselves.

The question does not ask for proofs of payments.

Question 2:

Draw up an outline of a report on your audit of the accounts of a corporation that has recently erected a large apartment house. Assume your instructions covered the period of erection and at least one year of operation.

Answer:

The question does not imply that the corporation was organized to build and operate one building alone. Therefore no report is made as to the organization of the corporation.

I should report that I had examined the contracts and vouchers for the erection of the building and had found that they furnished satisfactory proof that the labor and material cost amounted to so many dollars, detailed in annexed exhibit as the cost of excavating, foundations, brick, stone, etc., etc., subdivided to a greater or less degree, as desired. The plants for heating and for hot water and the distribution systems for these and for cold water should be scheduled separately, as should also be an electric system, if the building furnished its own electric light. The cost would also include the architect's fee, city permits, fire insurance during construction, employers' liability insurance and every other expense necessitated by the work of construction.

Finally there would come the cost of financing. If bonds had been sold to cover part of the cost, I would report that I had verified the price at which they had been sold by evidence furnished by the brokers. If sold at a discount, I would state the effective rate of interest for future guidance in writing off the discount.

In deference to the general opinion, I would add to this cost of the building any interest paid to contractors or paid on notes payable to raise money temporarily, and also the interest on the bonds at the effective rate until the building was ready to receive tenants.

Covering the year of operation, I would report that I had examined the leases on file and had compared their terms with the rent register, and that I had thus been able to verify the rent which ought to have been received, balancing this against the rents which the cashbook showed had been paid and the unpaid rents due by delinquent tenants, detailed by names and amounts.

I would report that I had found proper vouchers for all disbursements and had satisfied myself that all accounts payable were on the books. The procedure would not differ from that of any other audit.

I would prepare and submit a profit and loss statement, exhibiting the total rents earned, less a reserve against bad debts, then a detailed list of expenses, such as salary of superintendent, janitors' salaries, janitors' supplies, fuel, salaries of engineers and firemen, insurance, repairs, depreciation of the building and of the heating and other equipment, and any

other expenses large enough to classify except as "miscellaneous." Deducting the total of these expenses from the rents, I would show the difference as "operating profit." I would then list the financial expenses of interest on notes payable, if any, of interest on bonds and of pro-rated discount on bonds. Deducting these from the operating profit, I would show the "net profit (or loss)" for the year. A proper balance-sheet would complete the report.

If any rents were paid in advance at the end of the year, I would, of course, treat them as deferred credits, and not as earnings.

Question 3:

A corporation has issued $1,000,000 of 6 per cent 20 year bonds at 90 and for 8 years has written off 5 per cent of the discount each year. Last year an opportunity occurred to buy in $200,000 at 85, which was done and the bonds were canceled. The directors propose to take up into their year's revenue $30,000, the discount saved upon extinction of this liability. Do you approve? If not, what course would you advise, or, if they insist how would you act?

Answer:

Since, in an examination I do not have access to a bond value table, and have not time to calculate the effective rate of interest myself, I am forced to use the crude method, already adopted, of writing off 5 per cent of the discount annually.

Of the original discount of $100,000 there has already been written off 5 per cent or $5,000 annually for 8 years, or $40,000. This leaves the carrying value of the bond liability $940,000—$1,000,000 less balance of discount $60,000. The bonds are being carried at 94.

Therefore the $200,000 of bonds bought stood on the books as a net liability at 94, or $188,000. When 85 or $170,000 was paid for them there was a saving in discount of $18,000—not of $30,000.

The debit to bonds $200,000 would be represented by

Cash	$170,000	
Remaining discount 6% of 200,000	12,000	
Discount charged off 4% of 200,000	8,000	
Saving or profit	10,000	$200,000

Besides the credit to cash, there should be a credit to discount on bonds of $12,000. The $8,000 represents discount already charged off and now recovered and is therefore a legitimate credit to surplus. As the $10,000 is also a saving of discount, it might be called an extraneous profit to be credited to surplus, but a more conservative procedure would be to credit it to discount on bonds, reducing the balance of that account to $38,000, and consequently reducing the annual write-off of bond discount from $4,000 to $3,166.67. This will realize the profit of $10,000 in 12 annual instalments of $833.33 each, instead of in one lump sum now.

If the directors, after having the matter explained to them, insisted on crediting surplus with $18,000, I should yield to their wishes. If they insisted on the credit of $30,000 I should protest and refuse to sign an audit certificate.

Question 4:

"Inventory of merchandise should be carried at cost or market, whichever is lower." Do you assent to this proposition? Can you suggest circumstances in which you would approve a departure therefrom? Would you be influenced by events or conditions subsequent to the date of closing the accounts? Give reasons.

Answer.

As a general rule the proposition is sound. The object of a balance-sheet is the exhibition of the true condition of a business. An inventory appearing in it is supposed to represent actual value at a given date. If cost is used when that is higher than the current market value a wrong impression is given of the stock-in-trade. This may be used as an argument for valuing at market when that is higher than cost, but this argument is met by the stronger argument that a profit must not be anticipated. The same object can be attained as far as financial standing is concerned by using the cost valuation and showing the market value as a note.

It is contended by some that if a profit is not made until the goods are sold, and therefore that no profit is realized in the increase in market value, it will equally follow that no loss can be incurred except through a sale. The only answer to this is that it is more conservative and is also wiser to anticipate a loss than a profit.

One condition that would require the use of the market value for materials on hand, whether that value were lower or higher than cost, would be the preparation of a balance-sheet to be used as the basis of the sale of the business. The purchaser should pay whatever the goods would cost him in the open market.

If a fall in the price of raw materials does not carry with it a corresponding drop in the selling price of the product, there does not seem to be any imperative necessity for using the market price. The rate of profit is apt to be more steady if cost is used.

If the statement was being made some time after its date and in the meantime the market, which had been lower than cost at that date, had risen to or above cost, I should feel justified in using cost price, on the ground that the drop had been merely a temporary fluctuation.

Question 5:

Assume you are to audit periodically the accounts of the trustees of a decedent's estate, holding a large number of investments and frequently adding thereto. Outline a plan for your own guidance to detect the failure to collect or record the income from such investments. What would be your attitude regarding accrued interest or dividends in closing the accounts periodically?

Answer:

If my audit begins with the appointment of the trustees, my first duty would be to ascertain what securities had been turned over to them by the executors. Then I would verify all the subsequent purchases as to price and time of purchase. This would enable me to make a schedule of all securities held.

This schedule should show the rate of interest and date of its payment on all bonds and mortgages and other notes and of dividends on preferred stocks. If the cashbook did not show receipts corresponding to these records, it would be my duty to ascertain the reason.

If any of the investments consisted of common stock, the dividends that had been paid could be ascertained by consulting financial journals with respect to many stocks whether listed or not. Correspondence with officers of companies whose dividends were not so recorded would establish the rate and date of any dividends they may have paid. Absence of a record of the receipt of these dividends on the cashbook would require explanation that it might be difficult to make.

As the trustees of an estate are not conducting a business for profit, I should pay no attention to accrued interest in closing the books. The only duty of the trustees in regard to the income is to collect it all and to account for what they collect. The only time accrued interest would affect their accounts would be when they bought interest bearing securities on which interest had accrued or if any securities were sold or were given to any heirs in place of a cash distribution. In this country dividends, even if preferred, are generally considered as not accruing from day to day, but as belonging to the period in which they are declared; therefore no accrued dividends would be noticed, unless already declared.

Question 6:

Give some general principles which will guide you in determining whether too much or too little provision has been made for depreciation of buildings, machinery, tools, goodwill, patents, franchises. Would a flat rate cover all these assets satisfactorily?

Answer:

Montgomery says that depreciation is a local issue, by which he means that the rate is governed by local conditions. The auditor should study these conditions, seeking the advice of those who are thoroughly acquainted with the situation. For instance, the character of the water used may affect the life of a boiler. The fixing of the rate then becomes a matter of judgment, based on the greater or less experience of the auditor, as to the probable life of the asset.

In the case of buildings or machinery the amount of repairs would affect the rate, since an asset that is kept in first-class order will not depreciate as fast as one that is allowed to run down. Actual replacement of parts should be charged to depreciation reserve. If charged to repairs, the rate of depreciation should be smaller. If machinery is fitted only to produce a certain output which is not likely to be required after a comparatively short period or if it is liable to be superseded by improved machines, the rate of depreciation should be largely increased. This applies also to patents.

If by tools is meant only those that are perishable, no rate of depreciation can be applied to them, because the variation in them is too great. They should be treated in either of two ways: (1) an inventory should be taken at the end of a fiscal period and the difference between it and the

tools account should be charged to tool expense; or (2) the normal quantity of tools required should be determined and the supply always kept up to that standard, all purchases of tools being charged to tool expense.

Goodwill, since it represents earning power in excess of the normal, does not depreciate in a prosperous concern, and therefore does not have to be written off. On the other hand, if the concern is not prosperous, there will be nothing against which to write it off, unless the capital is reduced.

Patents do not depreciate—they waste by lapse of time. As their life is known, the annual rate of reduction in value is also known. This is modified, as already stated, by the danger of supersession, which in a sense is depreciation.

Franchises, when limited in time, are much like patents. When unlimited there is no occasion for writing them off, unless there is some reason peculiar to the case why they are liable to lose their value.

Applying to assets of such varying natures a flat rate of depreciation covering all alike would be impossible. Each class must be treated separately on its own merits.

Question 7:

On pointing out the insufficiency of the provision for depreciation on machinery, which the directors admit, you are met with the argument, supported by evidence, that the real estate values have appreciated to an even greater extent than the entire depreciation of other assets. As this latter is not taken up on the books you are asked to allow the one to offset the other. Give reasons for your agreement or disagreement.

Answer:

The answer must be one that would convince the directors, who are not accountants.

First, I would object to keeping accounts by unexpressed offsets, especially when the items are dissimilar. Depreciation of machinery is a manufacturing expense; increase in value of real estate, if allowed, is an extraneous or accidental profit. Therefore, if the contention of the directors is to prevail, an entry must be made charging real estate and crediting reserve for depreciation.

Next, I would call attention to the fact that the writing up of the real estate would put on the books a profit that had not been and might never be realized, since real estate has an unfortunate uncertainty as to value, which might cause a drop even greater than the recent rise. I would try to show them that a profit could arise only from a sale, and that the opinion of a real estate broker, even backed by an offer to buy, was not a sound basis for a profit, unless his offer was accepted and the profit was actually realized in money.

Finally, I would state that it made no difference which manufacturing expense was offset against the rise in value of the real estate—therefore that it would serve their purpose fully as well to allow the depreciation to be charged as it should be, and then to charge the indirect labor of one

of the departments to real estate, because it happened to be the right amount. The "reductio ad absurdum" is often a potent argument to those who do not understand accounting principles.

Question 8:

A financial institution has a large amount of capital invested in mortgages which are constantly changing. Suggest a plan for confirming by averages, and without a complete detailed examination of every account, the amount of income on this investment taken into profit and loss account for a year under examination.

Answer:

Each day of the year one day's interest accrues on the mortgages on hand, therefore the total interest earned in the year will be one day's interest on the sum of the daily balances of the mortgages account for the year, or one year's interest on the average of the daily balances, found by dividing the sum of the daily balances by 365.

If the institution is a bank, it should have a daily trial balance from which the daily balances of mortgages on hand may be obtained. If not, they must be built up from the ledger account and checked with the trial balance from time to time. For a Sunday or a legal holiday the balance of the preceding day must be repeated, since interest accrues every day, whether a dies non or not.

In listing and adding the balances sufficient accuracy will be attained for auditing purposes by taking the nearest hundred dollars of each balance. That is, $263,428.19 would be called $263.4, while $263,469.38 would be $263.5.

This is all based on the assumption that all the mortgages bear the same rate of interest. If the interest varies, no average is possible unless the auditor classifies the paper by opening a memorandum ledger account on his own sheets with each class of mortgages.

Question 9:

State how you would satisfy yourself that all outstanding liabilities of a business are properly taken up in the balance-sheet. Point out what you would like to find by way of system that would simplify this task. How would you indicate on the balance-sheet as of December 31st:

(a) Preferred dividend (cumulative) due the previous November 1, not declared;
(b) Ordinary dividend for the year, declared the following January 22nd;
(c) Ordinary dividend declared December 30th, payable February 1st?

Answer:

The verification of outstanding liabilities is one of the most difficult tasks of an auditor, because manipulation of the accounts would consist of the omission of entries crediting accounts payable for goods received whether the goods were included in the inventory or not.

If the omitted liability is one item of a number bought from the same concern during the month, the statement of that concern would disclose the omission. If only one bill had been bought from a concern during the last month, its suppression would not be thus discovered.

Nearly every concern has some system of recording the receipt of goods. The auditor should check all important items for the last fortnight or so of the period to see that they have been entered in the purchase journal or voucher register. If there are any indications in the inventory as to when goods were bought, purchases of recent date should be traced, as they may have been put into the inventory and both receiving and financial records held up until after the close of the period.

If the audit is being made some time after December 31, the entries in the purchase journal or voucher register since that date should be examined to see whether or not they include items that should have appeared prior to the closing of the books. The auditor should remember that it is not admissible to omit liabilities because the goods are not included in the inventory. While profits are not affected, the financial standing is, because in this way quick liabilities are offset against slow inventory assets.

I should like to find a complete system by virtue of which no goods of any kind could be received without going through a receiving department where competent records were kept. The ability to check these records against an equally competent and independent stores record and these against the proper purchase and accounts payable entries would greatly simplify the task of the auditor.

Accrued liabilities for taxes, wages, etc., would be easily ascertainable from the records.

To detect notes payable outstanding and not recorded, the auditor should inquire closely into the source of any large receipts of cash as shown by unexplained items on the cashbook. The amounts may be credited to the personal accounts of some of the officers. If they were allowed to remain there intact, they would appear as liabilities, it is true, but not of the same character as notes payable in the hands of outsiders. If such notes were renewed, interest would have to be paid. Therefore the auditor should always verify payments of interest as being due on recorded notes. If there is no recorded note to which the interest is applicable, the auditor would be guilty of gross carelessness if he did not discover the existence of the unrecorded note.

However, there are circumstances in which an auditor is not to blame for not discovering an unrecorded note. If the money is borrowed from persons other than the usual sources of loans, is used directly in payment for goods without going through the cashbook and the goods can be received without being recorded in a receiving department, either through lack of system or in any other way, there would be no record which would give the auditor any clue. If the interest on a renewal is paid by the personal cheque of an officer whose account is covered by a credit for some special expense, such as travelling, the auditor could not possibly detect the existence of the note.

(a) Cumulative preferred dividends are not a liability until they are formally declared; therefore they cannot be put on the books. In preparing a balance-sheet, however, a notation should be

made after the title surplus, "subject to past due preferred dividend of $....." This is done in order that all parties in interest may have due notice of the true condition of affairs.

(b) No notice should be taken of a common dividend that is not declared until after the date of the balance-sheet.

(c) Any dividend declared prior to the date of a balance-sheet, although not payable until after it, should be credited to dividends payable and charged to surplus, when declared. It would appear on the balance-sheet as an active liability, classed with ordinary accounts payable, but separately stated.

Question 10:

Your verification of the securities of a corporation has to be made at a date about two months subsequent to the date of the balance-sheet you are asked to certify. Can you suggest steps which will enable you to do this without risk of overlooking serious overstatement?

Answer:

The proper procedure would be to trace all transactions in securities for the two months since the date of the balance-sheet Starting with a list of the securities purporting to be on hand at the balance-sheet date, any sales that have been made should be verified by brokers' statements, and purchases should be verified by similar statements for prices and by finding the securities on hand. In this way a complete schedule could be prepared of the securities that should be on hand at present. The securities actually on hand should be compared with the schedule. All securities should be examined at one time to prevent manipulation. Certificates out for transfer should be verified by correspondence.

Question 11:

In auditing the books of a club with a restaurant, bar and cigar stand you are not satisfied that supplies are properly accounted for, although an inventory is supposed to be taken every month. How would you set about verifying your suspicions regarding the more expensive commodities (wine, liquors and cigars)?

Answer:

I should adopt a plan which should be used by all clubs to detect such shortages. Either quantities or retail prices may be used, the latter being more convenient.

Using cigars as an example, the inventory at the beginning of the month is classified by retail prices and extended at those values. To this is added the retail price of all cigars purchased during the month. From this total is deducted the amount which the records show were sold during the month, which, of course, would be at retail prices. The remainder should be the value at retail of the cigars on hand at the end of the month, which should be compared with the inventory extended at retail prices.

This will be an approximate verification, owing to the varying prices at which many cigars are sold, as in the case of those that retail at 10

cents each or 3 for 25 cents. An analysis of a few days' sales could be made to establish the average custom in that respect, which would make the approximation closer.

Of course, the use of retail prices would be confined to the verification of quantities sold. For financial statements the inventory should be at cost.

Wines and beer that are sold only by the bottle are very easily checked as to quantity, but liquors sold by the portion are less easy to check, because they are subject not only to a difference in price according to the number served at each order, but also to a difference in the size of the portions when each consumer pours out his own portion. The latter difficulty is obviated when each portion is served in a small bottle, so that the exact number of portions in the original container is known.

Question 12:

Indicate what would guide you in examining and criticizing accounts receivable carried on the branch office books of a business. What would you require before

(a) accepting the debts as good, or
(b) writing off those you were told were bad?

Answer:

The question does not state whether or not I am examining the books at the branch itself. If I were, or if the home office were in possession of carbon copies of all the branch accounts,

(a) I would consider as good all accounts that were not past due or that were only slightly past due, if satisfactory reasons were given for the delay;

(b) I would recommend writing off those that were long past due, the customs of the business in regard to length of credit being taken into consideration.

If I did not have access to the branch books or to authentic copies of them, I should be obliged to rely on a classified trial balance of the accounts receivable arranged in columns for those that are current, a short time past due and long past due, certified to by both the bookkeeper and the branch manager. If monthly trial balances had been sent in by the branch, the accounts long past due would probably be revealed by their balances not having changed for a number of successive months.

If any cause existed for believing that, by reason of insufficient control or internal check, the branch management had concealed peculations of collections from accounts receivable, I should require authorization of all non-cash credits to customers' accounts, and should then circularize all debtors.

Increase in Stumpage Value

Editor, Students' Department:

Sir: It is generally conceded that fixed assets should be carried at the original cost value.

In the case of timber lands bought many years ago, this appears to have aroused a storm of contention when the government proceeded to

fix prices in the various lumber industries. The prices naturally were to be fixed on the basis of present costs and the lumber men have contended that the present market value of the timber stumpage should be used.

A prominent man argued strongly before the federal trade commission recently on this matter and was opposed by one of their experts. The lumber man gave a number of different reasons for his stand, the most important ones being as follows:

The amount that should be charged into the manufacture of lumber for timber as exhausted—in other words, the stumpage charge—should be the reasonable market or replacement value thereof at the time when said timber is manufactured into lumber because:

1st. The manufacturer is entitled to the reasonable market value in liquidating his investment, to the same extent that the timber owner is entitled to said reasonable market value in the sale thereof to a prospective manufacturer.

2nd. The manufacturer originally invested not only to earn a profit in manufacturing, but also to earn the increment in the property in which he invested. This was the chief reason for investing, along with the assuring of a stable timber supply.

3rd. The stumpage should be absorbed in the operation of the manufacturer who owned his stumpage, in the same manner as if he was conducting two distinct operations with two different sets of stockholders, and the reasonable market value of his stumpage should be included in his cost rather than his original purchase price, plus his carrying charges.

Will you please give me your opinion on this matter, as the industry with which I am associated is confronted with the same problem.

Yours very truly,

G. W. W.

Your first sentence speaks of fixed assets, but your problem does not deal with fixed assets.

The proper definition of a fixed asset is one that is a permanent investment, necessary to the business and not intended for sale. Stumpage will not come under this classification. It is in a class by itself, a floating asset, but not a quick asset. It is midway between a fixed and a quick asset, as the latter is usually understood. It therefore is not subject to the rules that govern strictly fixed assets.

The treatment of very slow floating assets has not been very much discussed in the text books. Besides stumpage there are others, such as hubs, felloes, etc., in a wagon factory, which are kept seven or eight years to season; whiskey in storage to be aged, etc. In these cases the asset grows more valuable intrinsically each year. This increase in value is not an unearned increment, because in each case it has cost the owner interest on the money invested, and in some cases storage and insurance. I cannot see that there is any difference in kind between this increase and the increase in value of a baby pig to a fat hog. If the farmer is entitled to raise the value of his hog, I think the lumberman should be allowed to increase the value of his stumpage.

Of course, this is only my personal opinion and must be taken as such. If the federal trade commission does not agree, its decision must govern.

Book Entries as Affecting Contracts.

Editor, Students' Department:

Sir: I have recently run across a problem on which I would like a little information. I have three solutions, one each from the two parties

most concerned and my own, and no two of them agree. The case is as follows:

A employs B for a period of ten years to build a plant, A to furnish all capital necessary, B to construct the plant and after construction operate it under the direction of A. B is to receive a stated monthly salary, payable in cash, plus a share equal to 5% of the net profits of the business from and after the commencement thereof, which share shall be credited to the account of B upon the books of the company, and shall remain in the business and be credited and accumulated during the remainder of the employment period until the share of accumulated profits shall amount to 1/20th of the then total valuation of the property, the plant and business, including working capital, and all subsequent additions thereto to the time of said computation, when the accumulation shall cease and B shall be entitled to and own free and clear an undivided 1/20th share or interest in the property, plant and business, including working capital, which share or interest shall be thereafter credited with its proportionate share of the earnings of the business as a fully paid interest therein. . . .

At the expiration of the employment period A or his legal representatives, "will purchase the share of B at its then book value for cash, said book value to be figured upon the original cost of said property, plant and business with all additions thereto, including undivided profits thereon without deduction for depreciation thereof."

It is over this last clause that the trouble has arisen. The plant has been operated for several years without allowing for any depreciation, but now in order to take advantage of that part of the income tax which permits depreciation to be deducted in arriving at net profit, A insists upon depreciation being figured. B contends that he will lose by this operation. It will, of course, have the effect of reducing his share of the profits, so that at the end of the employment period his account will be smaller by 1/20th of the amount of the reserve set up for depreciation. The question is, will he jeopardize his right under the contract to enforce a settlement on the basis of the contract by allowing depreciation to be taken into the accounts at this time?

Another question: we have been reserving from current profits and charging our monthly operations with a certain per cent of the payroll, the reserve to take care of claims of employees under the workmen's compensation law. Suppose, at the end of the employment period there is quite a snug balance to the credit of this account, would B be entitled to his 1/20th share of this account as an undivided profit?

Yours very truly,

Hillsboro, Illinois. A. R. T.

The first question is too much like a legal question for a mere accountant to pass positive judgment upon it. However, I hazard the opinion that B will not jeopardize his interests by allowing the setting up of a reserve for depreciation. The contract virtually says that the book value is to be figured on the original cost without deduction for depreciation. If this means anything, it means that in estimating the book value of the business the reserve for depreciation shall be ignored. It must be added back to the surplus profits as if it had never been charged off against them. This does not have to be done on the books—it is merely part of the calculation of the price to be paid by A. It is plain that B gains an unfair advantage, but that is what the contract calls for and he is entitled to it. No routine entries on the books can be considered an alteration of the contract.

A general reserve, such as a reserve for contingencies, or, as in this case, a reserve for workmen's compensation, is always considered a subdivision of the surplus. The surplus itself is a reserve for contingencies and any reserve that is intended to cover an event that is not certain to happen is a mere sub-class of the surplus. It differs radically from a reserve for depreciation, which is not part of the surplus, because it represents an expense which has already occurred or is absolutely certain to occur. B is therefore entitled to his share of the business without any deduction on account of the reserve in question, provided all claims against the reserve have been settled to date.

William P. Field & Co. announce the removal of their offices to rooms 315-316 Edificio Horter, Obispo 7, Habana, Cuba.

Haskins & Sells announce that Edmund C. Gause, manager of the Pittsburgh office of the firm, has been admitted to partnership as of December, 1918.

Robert M. Holtzman announces the removal of his office to 509-510 Lincoln building, Philadelphia.

McLaren, Goode & Co. announce the opening of a branch office at Deseret Bank building, Main Street, Salt Lake City, Utah.

Davis, Teeter & Niquette announce the opening of a branch office at 805-6 Ford building, Detroit, Michigan.

J. S. M. Goodloe announces the opening of an office at 141 Broadway, New York.

A. G. Lingley announces that he has severed his connection with Patterson, Teele & Dennis and is now auditor of the National City Bank of New York, 55 Wall Street, New York.

The Gross Accounting Company announces the removal of its office to 141 Broadway, New York.

Crockett, Couchman & Crawford announce the removal of their Kansas City offices to 609-610 Republic building, Tenth and Walnut streets.